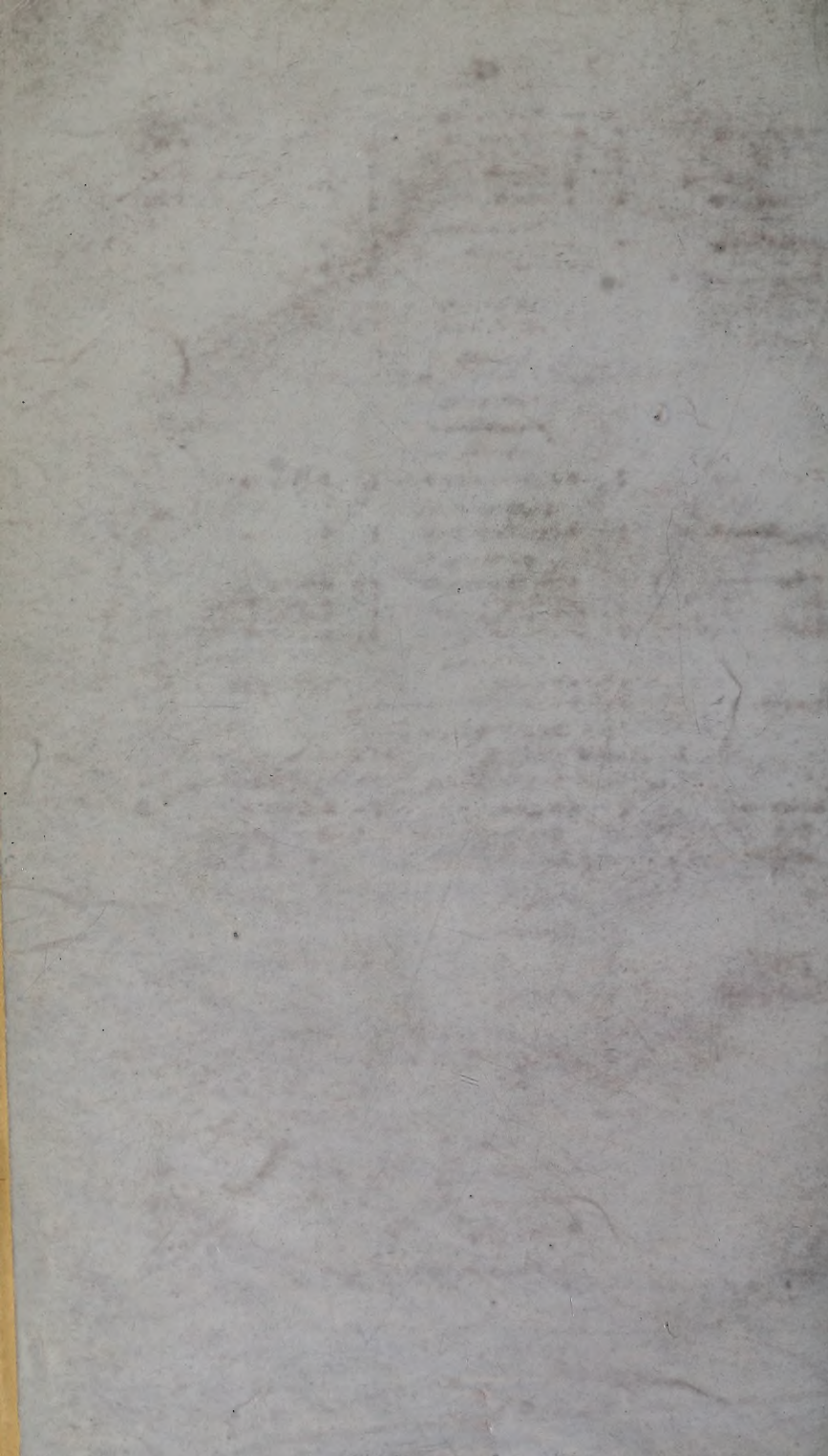


S-Au-Melbourne

1864-71

Melbourne. Acclimatisation  
Society of Victoria.  
Annual Report.  
3rd, 1864  
1871



Sept. 21, 1915.

26.141

# REPORT

OF THE

LIBRARY

Acclimatisation Society of Victoria.

CAMBRIDGE

AS ADVERTISED

AT THE ANNUAL MEETING OF THE SOCIETY, HELD MARCH 10TH, 1871.

AT THE MICHAMUS' ISLAND, MELBOURNE.

"Omnia sunt animalia cellas."

A MELBOURNE:

STILLWELL & KNIGHT, PRINTERS, COLLINS STREET EAST.

1871.



Professor J D Whitney  
with Baron von Muehl  
best regards

LIBRARY  
OF THE  
MUSEUM OF  
COMPARATIVE ZOOLOGY  
AND ANATOMY  
HARVARD UNIVERSITY

# REPORT

OF THE

## Acclimatisation Society of Victoria.

AS ADOPTED

AT THE ANNUAL MEETING OF THE SOCIETY, HELD MARCH 10TH, 1871,

AT THE MECHANICS' INSTITUTE, MELBOURNE.

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*"Omnis feret omnia tellus."*

---

MELBOURNE:

STILLWELL & KNIGHT, PRINTERS, COLLINS STREET EAST.

1871.





LIST OF THE OFFICERS

OF THE

ACCLIMATISATION SOCIETY.

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Patron.

HIS EXCELLENCY VISCOUNT CANTERBURY,

President.

DR. BLACK.

Vice-Presidents.

DR. VON MUELLER, C.M.G.      PROFESSOR MCCOY

Hon. Treasurer.

T. J. SUMNER, Esq.

Members of Council.

HON. A. MICHIE,  
COUNT DE CASTLENAU.  
F. G. MOULE, Esq.  
HON. DR. DOBSON, M.L.C.  
H. P. VENABLES, Esq., B.A.  
DR. JOSEPH BLACK.  
G. COPPIN, Esq.  
JOHN STEAVENSON, Esq.

J. B. WERE, Esq.  
F. C. CHRISTY, Esq.  
ALBERT PURCHAS, Esq.  
GEORGE SPRIGG, Esq.  
ROBERT HAMMOND, Esq.  
CURZON ALLPORT, Esq.  
DR. PUGH.

Hon. Secretary.

ALBERT A. C. LE SOUEF, Esq.





## ACCLIMATISATION SOCIETY OF VICTORIA.

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The Annual Meeting of the Acclimatisation Society of Victoria was held at the Mechanics' Institute, Collins-street, on Friday, March 10, 1871.

The President of the Society, Dr. Black, took the chair, and in doing so stated that His Excellency the Governor, who was the Patron of the Society, would have been present but for a prior engagement.

The hon. Secretary, Mr. Le Souef, then read the following report of the Council :—

The Council of the Acclimatisation Society has much pleasure in presenting to the subscribers, the Seventh Report of their proceedings.

Circumstances prevented the issue of the Report for 1869, the usual subsidy having been discontinued for that year, the efforts of the Society were necessarily confined to conserving the animals already in their possession, rather than directed towards the introduction of fresh stock. Last year the Government and Parliament again recognised the useful labours of the Society, the sum of £1,000 was voted towards its maintenance, and £400 has been granted for the first half of the present year. It is much to be regretted that the present list of subscribers is so small, but it is confidently anticipated that an improvement will take place in that respect in future.

Since the last report was published, the Society has lost the valuable services of Mr. George Sprigg as secretary, that gentleman having accepted another position, as in consequence of the loss of a large portion of the income of the Society, the Council were compelled to make the secretaryship an honorary office. On Mr. Sprigg's resignation, Mr. Lissignol was elected as his successor, and after Mr. Lissignol's removal in May last, the services of

Mr. Albert Le Souef, the Usher of the Legislative Council, were secured for the duties of honorary secretary. Under his management the Society bids fair to again become extensively useful.

At the date of the last report, the Society was daily expecting the arrival of some ostriches from South Africa ; the birds, four in number, reached Melbourne in safety, and Mr. Samuel Wilson, of Longerenong, kindly undertook their charge. They have now increased to sixteen, and there is every reason to suppose that their numbers will be considerably augmented in the course of this season. So far the experiment has been a marked success. Ostrich farming is a profitable occupation at the Cape Colony, and it is hoped will ultimately become so here. The climate of the Wimmera district appears to be well adapted to their habits ; as a proof of which, the young Australian birds are now taller than the parent stock.

The Society has disposed of a number of Angora goats during the last two years, having been compelled to do so, in consequence of their financial position ; though much regretted at the time, this must prove of advantage to the colony, as these animals are now in a great many hands, and as all who possess them are fully alive to their value, it is hoped that care and attention will be paid to them. A number of males have been purchased by persons who wished to place them with the common white goat ; the cross produces a fine and docile animal. The Society is now in possession of about seventy pure Angoras, the greater number of which are at Mr. Wilson's station, on the Wimmera, a locality in every way suited to them.

The Society has done and is doing all in its power to encourage sericulture in the colony, and to this end has, in conjunction with Dr. Von Mueller, sent white mulberry cuttings and plants to all parts of Victoria. Before this industry can become a commercial success a sufficient supply of food must be provided for the worms, and it is of interest to observe the large number of applications for cuttings to form plantations, and the great desire evinced to test practically so profitable and desirable an industry. Some months ago a box of silk-worm eggs was sent by the Government of India to His Excellency the Governor, who kindly handed them to the Society



for distribution, and lately a supply of very superior Japanese eggs, such as are seldom sold to foreigners, have been forwarded by Dr. Bennett, the Hon. Sec. of the Acclimatisation Society of New South Wales. The Council is in communication with the Hon. Mr. Verdon, one of the Vice-Presidents of the Silk Supply Association of London, and with Mr. Francis Cobb, the hon. secretary of that institution, and have asked the latter gentleman whether it would come within the scope of the operations of the Association to appoint some person in Melbourne to purchase cocoons, as there are a number of people who hold parcels, and are discouraged at not being able to turn the fruit of their labour into money. Until an answer has been received to this letter, the Council is prepared to forward cocoons to London, the sender paying the freight; and would impress upon sericulturists that it is quite unnecessary to reel the silk, as that operation is performed much better in England where machinery exists for the purpose. The Silk Supply Association, in one of their Reports recently published, recognises no less than 36,000 square miles of country in Victoria well suited to the growth of silk, and when the numerous young plantations come into bearing, a great stimulus will be given to this industry, which in all probability will, before many years, add materially to the wealth of the colony. The Council would here express their thanks to the President and Professor M'Coy, for the great interest they have always shown in developing sericulture.

The deer turned out at various times have increased rapidly, the Council have heard from time to time of considerable herds having become established in different parts of the country. The axis deer on the Grampians are numerous and widely spread, and other parts of the colony are stocked with varieties of the same animal. There are at present some surplus deer at the Society's Gardens at the Royal Park, which will be shortly liberated in suitable localities removed from settlement, whilst many have already been turned out this year.

The hares have increased in a very marked manner, and are rapidly extending throughout the country: a few have been lately placed in a district well suited to them, about forty miles from town, and the Council have in addition sent some to Tasmania and



New Zealand, as well as having supplied several applicants in Victoria.

With reference to pisciculture, the Council have to report that considerable progress has been made, notwithstanding several drawbacks and losses. One hundred ova of sea trout were received from the Salmon Commissioners of Tasmania last year, at the proper season, and were successfully hatched at the Royal Park, where they were retained with very small loss until fit for removal; they were then carried to a pond which had been prepared for them; but the water was found to be unsuitable, and a number of deaths occurred in consequence; the remainder were successfully removed without further loss to the head waters of a bright clear stream a day's journey from Melbourne. This experiment has proved that ova may be successfully hatched at the Society's establishment, and the young fish carried to any part of the colony. The Council therefore propose, for the present, to obtain ova from Tasmania rather than to incur the expense of preparing breeding ponds. It is proposed, after hatching the ova at the Royal Park, to distribute the young fish to persons who will place them in enclosed waters adapted for them, and who will engage to prepare ponds to keep fish for breeding purposes, so that the fry may be turned out each year into the open streams.

A large number of brown trout ova were also obtained last spring, and in compliance with previous arrangements were placed in hatching boxes upon a stream some distance up the country, at the station of a Member of the Society, who, at his own expense not only prepared the boxes, but also a pond. The boxes were properly protected so far as could be foreseen. The ova were successfully hatched, and the young fish in a fit state for moving, when some person in the absence of the owner cut away the zinc covering from the boxes and removed the young fish. It is disheartening to gentlemen who are spending their time and money in carrying out the objects of the Society to have their ends frustrated by such nefarious conduct. It is to be presumed, however, that the fry have been turned out elsewhere, it is to be hoped, into some stream suitable for them.

Several streams have already been supplied with young trout, and from one of them a fish was taken about six months ago measuring

ten inches in length; it is now exhibited as the first Victorian trout. The Council have just completed at their gardens a breeding pond for perch, and are advised that the parent fish will reach Melbourne from Tasmania on the 10th instant. From this pond the whole of the colony may be supplied. There is no doubt that the introduction of salmon and trout into the rivers of Tasmania, has proved a success. It is reported that large salmon have been seen this season, and trout fishing is now permitted under license. The fish caught some time back in the Derwent, about which a discussion took place, have been admitted to be true salmon; and as they were the young of fish reared in the colony, the acclimatization of them has been accomplished. The Council desire cordially to thank Sir Robert Officer and the Salmon Commissioners for the trout ova and fry they have sent, and also to express their appreciation of the services of the Melbourne Anglers' Protective Society in conserving the native fish.

The zoological element has not been neglected, and proves pleasing and instructive to many thousands of people who visit the Society's Gardens during the course of the year. A considerable measure of success has been achieved in the rearing of pheasants and wild-fowl during the season just passed, about sixty of the former have been reared, principally of the silver variety (*Phasianus Nycthemerus*), some of which have just been liberated. A great number of English and Indian wild duck have also been reared; some of these have been set at liberty in the lake at the Botanic Gardens; about forty young birds have taken flight with the native wild ducks visiting the ponds, and some others have been presented to gentlemen who have sent the Society birds or animals of interest in exchange.

The Council would here desire to mention to their friends in the country, that donations of any native birds or animals, excepting native bears, cats, or opossums, will be gladly received. If not required for the collection at the gardens, they are always useful for the purpose of exchange with other countries.

Since the date of the last Report, a number of pheasants (50 *Phasianus Pictus*), brought out by Captain Jones, of the *Superb*, were purchased partly by the Society, and partly by a gentleman

who has turned them out on his property, and who speaks very encouragingly of their rapid increase ; and the Council hear from time to time of the increase of pheasants in other localities.

The Council have sent to San Francisco, California, for a consignment of the splendid mountain quail of that country. And, at the request of the Society, His Excellency the Governor has kindly placed himself in communication with His Excellency Lord Mayo the Viceroy of India, on the subject of procuring partridges, pheasants, and jungle fowl from that country.

From past experience in the operations of the Society, the Council have considered it desirable to solicit, through the medium of the *Field*, and *Land and Water* newspapers in the mother country, the kind donations of animals and birds suitable to this climate, from owners of landed property and others who may possess them.

The Council intend to renew their efforts in the next session of Parliament, to amend the present Game Act. It is their opinion that the swivel gun ought to be at once abolished, as the effect of that weapon is to wound as many birds as are killed ; independently to its putting a stop to all legitimate sport.

The Council notice with regret that there is amongst some persons a tendency to decry the cause of acclimatisation, but there are others who take a very different view, and who regard the disinterested labours of the Society as useful in the highest degree. Its sole aim is to benefit the Colony at large, by filling its forests with game, and its rivers and creeks with fish, thereby providing a variety of food and sport for the inhabitants. Its efforts will be better appreciated as time goes on, and as the results become more apparent.

The Council cannot conclude this report without expressing their great obligations to the present Government, and to the late Parliament, for the supplies granted to carry on the work ; they would also respectfully wish to thank His Excellency the Governor, the Patron of the Society, for the great interest he has always shown in its proceedings.

The Council are likewise not unmindful of the valuable services in the cause of acclimatisation hitherto rendered by His Excellency Sir Henry Barkly, Governor of the Cape of Good Hope, and there



is every reason to believe that he will still continue to further the interests of the Society, whenever it is in his power to do so. The cordial thanks of the Council are likewise due to our numerous friends, especially to Mr. Edward Wilson, who, though in England, continues to take a lively interest in the objects of the Society, and has recently made a handsome donation to its funds. The Council is also indebted to Mr. Samuel Wilson, for his many services, and to Mr. Kendall, the agent for the P. and O. Company, for his kindness in granting permission on several occasions to send stock free of charge by the mail steamers ; the same concession has generally been granted by the agents of the different lines of inter-colonial steamers, for which the Council beg to tender their thanks.

In conclusion, they would express their warm thanks to Dr. Black, the President of the Society, and to Mr. T. J. Sumner, the Honorary Treasurer, for their disinterested and valuable services.

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Patron : — HIS EXCELLENCY VISCOUNT CANTERBURY continues to be Patron of the Society, and the following gentlemen are the present Office-bearers :—

DR. BLACK, *President.*

DR. VON MUELLER, C.M.G., *Vice-President.*

PROFESSOR McCOY, *Do.*

T. J. SUMNER, Esq., *Honorary Treasurer.*

HON. A. MICHIE, *Member of the Council.*

COUNT DE CASTLENAU, *Do.*

F. G. MOULE, Esq., *Do.*

HON. DR. DOBSON, M.L.C., *Do.*

H. P. VENABLES, Esq., B.A. *Do.*

DR. JOSEPH BLACK, *Do.*

G. COPPIN, Esq., *Do.*

JOHN STEAVENSON, Esq., *Do.*

J. B. WERE, Esq., *Do.*

F. C. CHRISTY, Esq., *Do.*

ALBERT PURCHAS, Esq., *Do.*

GEORGE SPRIGG, Esq., *Do.*

ROBERT HAMMOND, Esq., *Do.*

CURZON ALLPORT, Esq., *Do.*

DR. PUGH, *Do.*

ALBERT A. C. LE SOUEF, Esq., *Hon. Secretary.*

It will be necessary, under Rule 6, that the present Meeting confirm the appointment of the gentlemen who have been elected to the Council to fill vacancies which have occurred since the last Annual Meeting. The Society's Balance Sheet duly audited by Mr. Rucker, public accountant, up to the end of last year, is also submitted to the meeting.

Dr. VON MUELLER, C.M.G., Vice-President of the Society, moved the adoption of the Report and Balance-sheet, and in doing so said that it was gratifying to him to witness once more the proceedings of the Annual Meeting, more particularly as the last year closed in prosperity, and the new one had commenced hopefully. He considered that a large share of the present prosperity of the Society was due to the care and interest displayed by Mr. Le Souef; he felt it more his duty to refer to this as he knew from his former experience, as the executive officer of the first Zoological Committee, how much toil and anxiety were involved in such duties. He further wished to observe how large a field of operations there was before the Society; in enhancing the resources of the country, for instance, he thought that careful researches should be instituted in the mode of development of the sturgeon and herring, with a view of learning whether they could possibly be brought to these colonies. There was a time when the transfer of salmon to the distant south was deemed an impossibility, yet through the patient and thoughtful perseverance of Mr. Edward Wilson, Mr. Youl, Sir Robert Officer, Mr. Allport, and other promoters of the great salmon enterprise, it had been triumphantly accomplished. And he would here allude to the opportunities afforded by new Antarctic Navigation, for observing the transit of Venus, for perhaps locating the herring in the Antarctic Sea. Any increase of food in rivers and seas was effected without any cultural exertion, while the yield of such food, irrespective of its ordinary value, gave so much opportunity for fertilising the land without deprivation of any kind. Even on a small scale, much might be done by merely transferring a basketful of eels to any lagoon or chain of waterholes, which could not be utilised like flowing streams for trout and other superior fish. Already on his suggestion, eels had been taken from Melbourne to the rivers of St. Vincent's Gulf, and the lagoons near King George's Sound. He might here remark

that the new Industrial Museum afforded a splendid opportunity of bringing the commercial products of acclimatisation before the public.

He would also call attention to the fact, that the Society was entitled to the favourable consideration of the Legislature, not merely for the work of universal benefit which it continues to carry out, but also because it maintains a large recreation ground with garden plantations for the use of the general public, which otherwise the large and populous suburbs near the Royal Park would be deprived of; and he might be permitted to state that it would afford him pleasure to continue to aid in the extension of the park plantations. He would remark, in conclusion, that he hoped to be able this year to establish (as long ago recommended in his official reports), test plantations in different climatic localities, one for instance in the Lower Murray Desert, one on the Alpine Highlands, and one in the Fern Tree Gullies. This might give new facilities for local experiments in the cause of acclimatisation.

Mr. PURCHAS seconded the adoption of the Report and Balance-sheet, and in doing so stated that he considered the Report as the most favourable one that had been put forward by the Society for some years.

The motion for the adoption of the Report and Balance-sheet was put to the meeting by the chairman, and unanimously carried.

Mr. S. P. WINTER, of the Wannon, said he would avail himself of this opportunity, to thank the Society for having at the suggestion of the President, given him a very valuable present of six silver pheasants, to send to the Wannon Valley. Having reared within the past four years a large number of English pheasants, from birds imported from England, and having the necessary enclosures, and men who understood the rearing of the young pheasants, he had no doubt he should in due time be able to supply birds and eggs to settlers who would incur the expense of providing proper places for breeding.

Mr. CURZON ALLPORT then addressed the meeting. There was one course, he stated, not referred to in the report just read, and which he thought should be known to the public, namely: that the Council had appointed sub-committees to deal with particular branches of acclimatisation; for instance game birds, fish, &c., the sub-com-



mittee consisting of gentlemen interested in the particular pursuits to which the sub-committee respectively related. That as to the progress of the acclimatisation of fish, to which he had paid more particular attention, the sub-committee had come to the conclusion, that rather than at present incur the expense of preparing and keeping up breeding and rearing ponds, it would be better to subscribe a certain sum per annum towards the cost of the ponds in Tasmania, and obtain from thence a supply of ova in return, which could be hatched at the Royal Park, and the young fish distributed, when ready for removal, as indicated in the Report. By this means the produce of the parent fish might be drafted into the streams each year, instead of risking the increase to comparatively few fish turned loose into a large stream, exposed to all their enemies. Several gentlemen had already, at their own expense, prepared breeding ponds for the reception of fish, some for trout, and others for perch. The sub-committee had just completed a pond at the Royal Park, and he had had the pleasure and satisfaction of placing a number of young perch in it that day, which he had just received from Tasmania, from his brother Mr. Morton Allport; a similar number had also been placed in a pond, prepared by the Hon. A. Michie.

Mr. Coppin remarked, that when in Tasmania, within the last week, a gentleman had killed twenty-five genuine trout there at one day's fishing, which was considered a good basket.

The CHAIRMAN called attention to some specimens on the table, one was a trout (preserved in spirits), the first caught in Riddell's Creek, Mount Macedon, one of the numerous fry placed in the creek upwards of eighteen months ago. There were also some excellent samples of silk, sent by Mrs. Pike, of Toorak, and Mrs. Henley, and Mrs. Talbot, of Richmond. Sericulture he expected to become at no distant date a very important industry.

A discussion of a conversational character ensued relative to the scope and objects of the Society. The chairman stated that the Society, acting on the suggestion of the Government, had some time ago sent over goats, rabbits, pigs, and poultry, to the Auckland Isles, for the sustenance of such persons as were unfortunate enough to be shipwrecked there. Wrecks had occurred on the island since, and the live stock had proved of great benefit.

Mr. WINTER, in answer to the chairman, said that in the Western District he found indigenous birds injurious to his fruit trees, particularly the black magpies. A simple plan of frightening birds away, was a bottle bell hung to the trees, which was made by cutting off the bottom of a champagne bottle, by means of a cotton wick saturated in turpentine, which must be ignited, and the bottle dipped when hot into a bucket of cold water, a piece of hard cork or soft wood suspended from the mouth of the bottle formed a clapper, which was kept in motion by a feather inserted in it. He (Mr. Winter), had found this plan answer very well.

COUNT DE CASTELNAU spoke of a plan said to be adopted by the Malays, that of hanging up a wooden effigy pierced with holes, the wind passing through which, caused most unearthly noises.

Dr. JOSEPH BLACK called attention to the fact, that hares were being frequently killed, and hoped that an expression of disapproval from the Society would have the effect of preventing persons from wantonly destroying those valuable animals, before they had become thoroughly established.

The PRESIDENT said, that the Society had done what it could to punish persons who were caught destroying hares, he was pleased to state that in many parts of the country hares were abundant. If they were allowed to increase unmolested for a couple of years more, the law would be changed, and coursing might be allowed without objection.

Mr. CHRISTY said he had noticed the sparrows doing good service in his garden, by killing the aphids on roses.

Dr. PUGH added, that sparrows sent to a gentleman at Sunbury, had not only done no mischief to the fruit, but cleared the garden of aphids, and been a great benefit in all respects.

Mr. WERE remarked, on the other hand, that according to the testimony of market gardeners, the destructive qualities of the sparrow had far exceeded its beneficial qualities.

The PRESIDENT said that the letters furnished on the subject by market gardeners and others to the Society, came from a small number of persons, and were not all of a trustworthy character. The English people were naturally given to grumbling, and not only

the sparrows but everything else introduced by the Society, would be found fault with by some.

On the motion of Mr. Moule, the appointment of the various gentlemen who had been elected to the Council since the last Annual Meeting, was confirmed.

There being no other business before the meeting, it closed with a vote of thanks to the Chairman.



# Account of Monies received and paid by the Acclimatisation Society of Victoria, During the period 20th May to 31st December, 1870.

17

RECEIPTS.		EXPENDITURE.	
	£ s. d.		£ s. d.
Government Grant .. ..	1,000 0 0	Liabilities incurred <i>ante</i> 20th May ..	355 13 9
Subscriptions and Donations .. ..	64 12 0	Purchase and Transport of Stock .. ..	74 0 3
Proceeds of Sale of Stock .. ..	34 6 6	Food and Forage .. ..	134 15 11
Moiety of Fines recovered by the Police .. ..	2 0 0	Wages .. ..	170 4 0
		Office Expenses, Rent, &c. .. ..	70 16 11
Grazing Fees received on account of the Trustees of the Royal Park .. ..	1,100 18 6	Incidental Expenses — Advertising, Printing, Collector's Commission, &c. .. ..	65 11 3
Money received from S. Sohn, of New Caledonia, for purchase of Birds .. ..	18 12 0	Premises, Repairs and Maintenance of Grounds .. ..	69 18 8
		Repairs to Buggy .. ..	6 7 6
Balance at the Bank of Victoria, 20th May .. ..	39 9 6	On account of Vote to the Fishery Committee .. ..	20 0 0
		December 21.	967 8 8
		Cash in the Secretary's hands .. ..	3 0 1
		Balance at the Bank of Victoria .. ..	305 19 3
			£1,276 8 0

Examined and compared with the Society's Books, the Bank Pass-book, and Vouchers, and found to correspond in every particular.

Melbourne, 13th January, 1871.

E. F. A. RUCKER, Auditor.

ALBERT A. C. LE SOUEF, Secretary.

## LIFE MEMBERS.

All Members marked thus \* pay their Annual Subscription Iso.

Aldworth and Co., Sandhurst	£10 10 0	Jenner, Hon. C. J., M.L.C.	£10 10 0
Armitage, George, Ballarat ..	10 10 0	Jones, Lloyd, Avenel ..	10 10 0
Armstrong, W., Hexham ..	10 10 0	*Joshua Bros., William-street ..	10 10 0
Austin, Thomas, Barwon Park ...	10 10 0	Landells, G. J., Lahore, India ..	Services
Bagot, C. N., Melbourne Club ..	10 10 0	Layard, C. P., Colombo ..	Services
Barkly, His Excellency Sir Henry	42 0 0	Layard, E. L., Cape Town ..	Services
*Bear, Hon. J. P., M.L.C. ..	21 0 0	Learmonth, Thomas, Ercibdan-	
Bear, Thomas H.; Heidelberg ..	10 10 0	riley, Portland ..	10 10 0
Black, Dr. Thomas, Melbourne		Londesborough, The Right Hon-	
Club .. ..	10 10 0	orable Lord, Carlton Gardens,	
Black, W., Belfast ..	10 10 0	London ..	37 10 0
Borough Council of Sandhurst ..	10 10 0	Lyall, W. ..	10 10 0
Box, H., Little Collins-street		Mackinnon, L., "Argus" Office	Services
West .. ..	10 10 0	Mackenzie, John, 70½ Queen-	
Boyd and Currie, Collins-street		street .. ..	£10 10 0
West .. ..	10 10 0	Macintosh, Alexander, Green	
Bright Brothers, Messrs. & Co.,		Hills, Diggers Rest ..	10 10 0
Flinders-lane .. ..	10 10 0	Marshall, Captain D. S., "A.	
Brown, Lindsay, Garramadda,		H. Badger" ..	Services
Wahgunyah .. ..	10 10 0	Martin, Dr., Heidelberg ..	10 10 0
Canterbury, His Excellency		Matheson, J., Bank of Victoria ..	21 0 0
Viscount .. ..	10 10 0	McGill, A. ..	10 10 0
Catto, John, Newbridge, Loddon	10 10 0	McGregor, Samuel, Belfast ..	10 10 0
Chambers, H. J., St. Kilda ..	Services	McHaffie, John, Phillip Island ..	10 10 0
Cooper, Sir Daniel, London ..	37 2 0	McMullen, J., Union Bank ..	21 0 0
Coppin, Geo. S. ..	10 10 0	Molloy, W. T., Balmoral ..	10 10 0
Creswick, Borough Council of ..	10 10 0	Mueller, Dr. F. Von, Botanic	
Cumming, G., Mount Fyans ..	10 10 0	Gardens .. ..	10 10 0
Cumming, W., Mount Fyans ..	10 10 0	Municipal Council of Ballarat	
Curr, E. M., Queen-street ..	10 10 0	West .. ..	20 0 0
Dalgety and Co, Messrs., Little		Murray, S., Dunrobin ..	10 10 0
Collins-street .. ..	10 10 0	*Nicholson, Germain, Collins-	
Docker, F. G., Wangaratta ..	10 10 0	street East .. ..	10 10 0
*Falconer, J. J., Bank of Austral-		*Officer, C. S., Mount Talbot ..	10 10 0
asia .. ..	20 0 0	*Power, Hon. Thomas H., Haw-	
Fellows, The Hon. T. H. ..	10 10 0	thorn .. ..	10 10 0
Firebrace, R. T. ..	10 10 0	Purchas, Albert, Kew ..	Services
Fussell, R. S. R., Fou Chou		Ritchie, J., Streatham ..	10 10 0
dols. 50 .. ..	11 0 10	*Rostron, John R., Navarre ..	10 10 0
Glass, Hugh, 18 A'Beckett-street	21 0 0	Rusden, G. W., Brighton ..	10 10 0
Glass, R. J., Waiparella ..	10 10 0	Russell, A. Matuwalloch ..	10 10 0
*Henty, The Hon. S. G., M.L.C. ..	10 10 0	*Rutledge, William, Belfast ..	10 10 0
Hervey, The Hon. M., M.L.C.,		*Salmon, J. E., S. and A. C. Bank	21 0 0
Melbourne Club .. ..	10 10 0	Sargood, King and Sargood,	
*Hoffmann, W., Bush Back,		Flinders-street East ..	10 10 0
Essendon .. ..	25 0 0	Shoobridge, E., Valleyfield, Tas-	
Jamieson, Hugh .. ..	10 10 0	mania .. ..	10 10 0

Simpson, Robert, Lange Kal				Taylor, Frederick, [Melbourne			
Kal .. .. .	£10	10	0	Club .. .. .	£10	10	0
Sladen, Hon. C., M.L.C., Birre-				*Taylor, W., Overnewton, Keilor	10	10	0
gurga .. .. .	10	10	0	Templeton, Hugh, Fitzroy			Services
Sloan, W. S., Fou Chou, dols. 50	11	0	10	*Ware, Joseph, Carramut .. ..	10	10	0
Spowers, Allan, "Argus" Office	10	10	0	Wilson and Mackinnon, Collins-			
Stanbridge, W. E., Daylesford ..	10	10	0	street East .. .. .	42	9	0
Staughton, S. T., Little Collins-				*Wilson, Edward, "Argus" Office	21	0	0
street West .. .. .	10	10	0	Wilson, Samuel, Wimmera ..	10	10	0
Stewart, J., Emerdale, Streatham	21	0	0	Winter, James, Toolamba, Mur-			
Strachan, J., London Chartered				chison .. .. .	10	10	0
Bank .. .. .	21	0	0	Winter, Thomas, Winchelsea ..	10	10	0
Sumner, T. J., 24 Flinders-lane				Winter, S. P. .. .. .	10	10	0
West .. .. .	10	10	0	Youl, James, A., Clapham Park,			
				London .. .. .			Services

## ANNUAL MEMBERS.

Allport, Curzon, Chancery-lane ..	£2	2	0	McNaughton, Love and Co. ..	£2	2	0
Baines, Edward, Little Collins-street	2	2	0	Moule, T. G., Market-street ..	2	2	0
Banks, Bros., Bell and Co., Flinders-				Nicholson, Germain, Collins-street	2	2	0
lane .. .. .	2	2	0	Paterson, Ray, Palmer and Co. ..	2	2	0
Bligh and Harbottle, Flinders-lane	2	2	0	Power, T. H., Power, Rutherford			
Black, Dr., Bourke-street .. ..	2	2	0	and Co. .. .. .	2	2	0
Brodribb, K. E., Chancery-lane ..	2	2	0	Pugh, Dr., Collins-street .. ..	2	2	0
Bindon, Judge, St. Kilda .. ..	2	2	0	Robertson, Wm., Temple Court ..	2	2	0
Christy, F. C., Malvern .. ..	2	2	0	Ryan and Hammond, Bourke-street	2	2	0
Evans, G. E., "Argus" Office ..	2	2	0	Rosser, C. and E., Brunswick ..	5	0	0
Emerald Hill Borough Council ..	5	0	0	Sloane, Wm. and Co., Collins-street	2	2	0
Fiskin, Archibald, Lal Lal .. ..	2	2	0	Sargood, Son and Co., Flinders-			
Fraser and Co., Collins-street ..	2	2	0	street .. .. .	2	2	0
Fanning, Nankivell and Co. ..	2	2	0	Stevenson, L. and Sons, Flinders-			
Goldsbrough and Co., Bourke-				lane .. .. .	2	2	0
street West .. .. .	2	2	0	Sands and McDougall, Collins-			
Gray, Charles, Nareeb Nareeb ..	2	2	0	street .. .. .	2	2	0
House, Son and Co., Elizabeth-				Small, R. W., Brighton .. ..	2	2	0
street .. .. .	2	2	0	Sprigg, George, St. Kilda .. ..	2	2	0
Haddon, F. W., "Argus" Office ..	2	2	0	Venables, H. P., Caulfield ..	5	0	0
Governor, His Excellency the ..	10	0	0	Wilson, Edward, England .. ..	2	2	0
Joshua Bros., William-street ..	2	2	0				

## DONATIONS.

Alcock and Co., Russell-street ..	£1	1	0	Grice, Richard, Grice, Sumner			
Anderson and Wright, Flinders-lane	1	1	0	and Co. .. .. .	£1	1	0
Briscoe and Co., Collins-street East	1	1	0	Howitt, Dr., Caulfield .. ..	1	1	0
Courtney, E., Temple Court .. ..	1	1	0	McDougall, James, Carlton ..	1	1	0
Dobson, Hon. Dr., Temple Court ..	1	1	0	Nutt, R. W., Collins-street ..	1	1	0
Dunn, Dr. Robert, Maryborough ..	1	1	0	Pike, Mrs. J., Toorak .. ..	0	10	0

## HONORARY MEMBERS.

Allport, Morton, Hobart Town.  
 Beckx, Gustave, Flinders Lane West.  
 Biagi, Giuseppe, William Street.  
 Blanchard, W., Collins Street West.  
 Bouton, A., Yahoue, New Caledonia.  
 Buckland, Dr. F., London.  
 Castelnau, Comte de, Apsley Place.  
 Chalmers, Dr., New Zealand.  
 Cleeland, J., Albion Hotel, Bourke-street.  
 Cooper, Ricardo, Queen Street.  
 Coste, Professor, Huningue.  
 Damyon, James, Market Street.  
 Drouyn, de Lhuys, Paris.  
 Francis, Francis, London.  
 Gillanders & Arbuthnot, Calcutta.  
 Godfrey, Captain J. B., New Zealand.  
 Graham, James Little Collins Street East.  
 Grote, Arthur, Calcutta.  
 Johnston, Clement, Crown Lands Office.  
 Latham, General.  
 Madden, Walter, Office of Mines.

Mathieu, A., Yahoue, New Caledonia.  
 Merryman, Captain, Essex.  
 Michaelis, Moritz, Elizabeth Street.  
 Michael, Major, Madras.  
 McQueen, Captain, "Martha Birnie."  
 Mullick, Rajendro, Calcutta.  
 Officer, Sir Robert, Hobart Town.  
 Ploos Van Amstel, J. W., Collins St. West.  
 Ramel, Monsieur, Paris.  
 Rentsch, Samuel, Flinders Street East.  
 Ridgers, Captain, "Sussex."  
 Robinson, J., Calcutta.  
 Salt, Titus, Saltaire, England.  
 Scholstein, Adolp., Flinders Lane West.  
 Selater, Dr. P. L., London.  
 Shinner, Captain, "Lincolnshire."  
 Smith, Captain, "Dover Castle"  
 Squire, Surgeon John, Dinapore.  
 St. Hilaire, G., Bois de Boulogne, Paris.  
 Were, J. B., Collins Street West.



# THE RULES AND OBJECTS

OF THE

## Acclimatisation Society of Victoria.

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1. The objects of the Society shall be the introduction, Objects of Society. acclimatisation, and domestication of all innoxious animals, birds, fishes, insects, and vegetables, whether useful or ornamental ;—the perfection, propagation, and hybridisation of races newly introduced or already domesticated ;—the spread of indigenous animals, &c., from parts of the colonies where they are already known, to other localities where they are not known ; the procuring, whether by purchase, gift, or exchange, of animals, &c., from Great Britain, the British colonies, and foreign countries ;—the transmission of animals, &c., from the colony to England and foreign parts, in exchange for others sent thence to the Society ; the holding of periodical meetings, and the publication of reports and transactions, for the purpose of spreading knowledge of acclimatisation, and inquiry into the causes of success or failure ;—the interchange of reports, &c., with kindred associations in other parts of the world, with the view, by correspondence and mutual good offices, of giving the widest possible scope to the project of acclimatisation :—the conferring rewards, honorary or intrinsically valuable, upon seafaring men, passengers from distant countries, and others who may render valuable services to the cause of acclimatisation.

2. A Subscriber of two guineas or upwards annually shall Membership. be a Member of the Society ; and contributors, within one year, of ten guineas or upwards shall be Life Members of the Society ; and any person who may render special services to the Society, by contribution of stock or otherwise, shall be

eligible for life membership, and may be elected as such by the Council, or by any annual general meeting.

Subscrip-  
tions.

3. The annual subscription shall be payable on the 1st day of January in each year, and may be received by any Member of the Council, or the Collector, either of whom on receiving the same shall cause the person so subscribing to be enrolled a member accordingly.

Property  
vest in  
Trustees.

4. All the property of the Society, of what nature and kind soever, shall vest in Trustees to be appointed by the Council, for the use, purposes, and benefit of the Society.

Executive  
Officers.

Council.

5. The Society shall be governed by a Council of eighteen Members, to include a President, two Vice-Presidents, and an Honorary Treasurer, three of whom (viz., those who have attended the fewest Meetings of the Council proportionately since their appointment) shall retire annually, but shall be eligible for re-election. Provided that if any sum of money be voted to the Society by Act of Parliament, or trusts conferred upon the Council by the Government, then it shall be lawful for the Chief Secretary for the time being to appoint, if he consider it expedient, any number of gentlemen, not exceeding three, to act as Members of the Council, and they shall have all the privileges as if otherwise duly elected; and further, to appoint one Co-Trustee, to act in conjunction with the Trustees for the time being of the Society. And provided further, that if the Melbourne Corporation, or any of the adjacent municipalities, shall decide upon expending any sum of money exceeding £100 in any one year, upon the grounds or for the objects of the Society, the Mayor of Melbourne or Chairman of such municipality shall be for such year a Member of the Council, and be at liberty to act in every respect as an ordinary member.

Vacancy in  
Council,  
how sup-  
plied.

6. In case of a vacancy occurring by the death, resignation, or non-attendance of any Member of Council for the period of two months, the remaining Members may appoint another Member of the Society to be a Member of the Council in the place and stead of the deceased, or resigned, or absenting Member, and such new Member may act until the next annual general meeting. Provided that such vacancy shall not be supplied by the Council except after seven days' notice given

of the new Member to be proposed, and unless in the presence of at least seven Members of the Council.

7. The Society shall hold periodical meetings, at which papers and other communications relating to the objects of the Society, and reports prepared by the Council, shall be received, and such discussions shall be encouraged as may be of value in propagating a knowledge of acclimatisation amongst the Members and the public. And such business generally shall be disposed of as may be brought under consideration by the Council, or by any Member who shall have given seven days' previous notice thereof to the Secretary, or as a majority of two-thirds of the Members present shall see fit to entertain and consider ; and each Member shall have the privilege of introducing two friends at such meetings.

Quarterly  
Meetings  
of the So-  
ciety.

8. The Council shall meet at least once a month, and three Members shall form a quorum, and be capable of transacting the business of the Council, subject to such limitations as may be imposed by any bye-law of the Council, or rule, or resolution of the Society, which may be hereafter made.

Meetings of  
Council.

9. The Council shall have the sole management of the affairs of the Society, and of the income and property thereof, for the uses, purposes, and benefit of the Society ; and shall have the sole and exclusive right of appointing a President, Vice-Presidents, and Honorary Treasurer from amongst themselves or the other Members of Society, and also of appointing paid servants, as a manager or secretary, collector, and such other officers, clerks, and labourers, and at such salaries as they may deem necessary, and of removing them if they shall think fit, and shall prescribe their respective duties. And such Council shall have power to consider and determine all matters, either directly or indirectly affecting the interests of the Society, and if they shall think fit so to do, shall bring the same under the notice of the Members of the Society, at any general or special meeting ; and to make such bye-laws as they may deem necessary for the efficient management of the affairs and the promotion of the objects of the Society, and for the conduct of the business of the Council, provided the

Powers and  
Duties of  
Council.

same are not repugnant to these rules; to appoint one or more sub-committees, for any purpose contemplated by these rules; and generally to perform such acts as may be requisite to carry out the objects of the Society, which bye-laws are to be subject to ratification, or emendation, or ejection, by the next annual or special general meeting of the Society. And it shall be the duty of the Council to exercise the foregoing powers as occasion shall require, and to furnish reports of the proceedings at every periodical and annual meeting of the Society.

Branch So-  
cieties, &c.

10. The Society shall have power to affiliate or associate itself with other Societies of kindred objects, and to found Branch Societies if desirable; and the Council shall have power to carry out any arrangements for this purpose, and to furnish any monthly or other reports.

Minutes of  
Proceedings.

11. Minutes shall be made, in books kept for the purpose, of all the proceedings at the general and special meetings of the Members, and minutes shall also be made of the proceedings of the Council at their general and special meetings, and of the names of the Members attending the same, and such minutes shall be open to inspection by any Member of the Society at all reasonable times.

Moneys to be  
paid to  
Treasurer.

12. All subscriptions and other moneys payable to the Society shall be paid to the Treasurer, who shall forthwith place the same in a bank, to be named by the Council, to the credit of the Society; and no sum shall be paid on account of the Society until the same shall have been ordered by the Council, and such order be duly entered in the book of the proceedings of the Council; and all cheques shall be signed by the Treasurer as such, and be countersigned by the President, or one of the Vice-Presidents, or by some other Member of the Council delegated by the Council to act as such.

Annual  
Meeting

13. An annual meeting shall be held in or about February of each year, and the Council shall report their proceedings during the past year, and shall produce their accounts, duly audited, for publication if deemed desirable; and the meeting shall elect new Members of Council to supply the vacancies therein. And notices of motion must be furnished to the Secretary one day previous to the holding of



such meeting, or such motions may be rejected by the Chairman.

14. All privileges of membership shall cease in case any Member shall be three months in arrear, subject, however, to his restoration on the payment of such subscription as aforesaid, accompanied by satisfactory explanation. Non-pay-  
ment of  
Subscrip-  
tions.

15. Upon receiving a requisition in writing, signed by twelve or more Members of the Society, or upon a resolution of the Council, the president, or in his absence one of the Vice-Presidents, shall convene a special meeting of the Members, to be held within fifteen days of the receipt by him of such requisition or resolution. Provided always that such requisition and resolution, and the notices thereunder convening the meeting, shall specify the subject to be considered at such meeting, and that subject only shall be discussed at such meeting. Special Meet-  
ings of  
Members.

16. The council or any general meeting of the Society may admit, as Honorary Members, such ladies or gentlemen as may have distinguished themselves in connection with the objects of the Society, or in objects of a kindred nature. Honorary  
Members.

17. It shall be lawful for any annual or special meeting of the Society to alter, vary, or amend the rules ; or to substitute another for any of the same ; or to make any new rule which may be considered desirable ; if and after a notice specifying the nature of such alteration, variation, amendment, substitution, or new rule, shall have been given to the Secretary fifteen days before the holding of such meeting. And such alteration, variation, amendment, substitution, or new rule shall be valid if carried by a majority of not less than two-thirds of the Members present at such meeting. Power to al-  
ter Rules.

# LIST OF ANIMALS AND BIRDS

IN THE ROYAL PARK AND ACCLIMATISATION SOCIETY'S GARDENS, MELBOURNE.

11 Brahmin cattle	1 Ceylon porcupine	2 Curassows
6 Hog deer	1 Leopard	3 Kagus
7 Bairanga deer	2 Native dogs	2 Maori hens
7 Formosa deer	1 Tasmanian devil	1 Kiwi
7 Sambur deer, or Ceylon elk	1 English Fox	2 Bleeding heart doves
1 Fallow deer	3 Opossums	2 Macaws
2 Nylghau	3 Emeus	3 Blackbirds
4 Mauritius deer	18 English pheasants	2 Jackdaws
2 Japanese deer	22 Silver pheasants	1 English magpie
12 Angora goats	9 Pea fowl	3 Owls
1 Agouti	4 Jungle fowl	A number of native cockatoos and parrots of different varieties; about the grounds large numbers of doves, and some Californian quail.
1 Madagascar sheep	11 Egyptian geese	
1 Cape sheep	6 Geese	
7 Monkeys	About 70 ducks	
5 Wallaby	3 Crown goura pigeons	
2 Kangaroo rats	2 Ravens	
1 Wombat	1 Mooruke	
	2 Tallegalla	

## ANIMALS LIBERATED.

### AT THE BOTANICAL GARDENS.

18 Canaries	6 California quail	4 English robins
18 Blackbirds	80 English wild ducks	8 Turtle doves
14 Thrushes	35 Java sparrows	50 Mainas

### AT PHILLIP ISLAND.

0 Hares	4 Chinese partridges	5 Pheasants
5 Cape pheasants	70 Chinese quail	6 Skylarks
8 English pheasants	23 Tasmanian quail	6 California quail
4 Indian pheasants	6 Starlings	4 Thrushes
8 Ceylon partridges	10 Algerine sand grouse	4 Blackbirds
5 Indian partridges	6 Wild ducks	1 Pair white swans

### AT SANDSTONE AND CHURCHILL ISLANDS.

Pheasants	4 Skylarks	4 Thrushes
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### AT YARRA BEND.

6 Thrushes	4 Skylarks
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### NEAR SYDNEY.

9 Thrushes	4 Skylarks	10 Blackbirds
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### AT SUGARLOAF HILL.

5 Ceylon elk	3 Axis deer
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### AT WILSON'S PROMONTORY.

4 Axis deer

### AT THE ROYAL PARK.

4 Hares	2 Thrushes	6 Blackbirds
20 Mainas	20 Greenfinches	20 Siskin finches
6 Starlings	15 Yellowhammers	6 Powi birds
60 English sparrows	200 Java sparrows	3 Partridges
40 Chaffinches		6 Pheasants

### AT PENTRIDGE.

40 English sparrows

### AT ST. KILDA.

20 Chinese sparrows

## AT BALLARAT.

5 English sparrows

20 Java sparrows

## AT BUNEEF.

13 Fallow deer

## AT CAPE LITRAP.

2 Hog deer

4 Ceylon peafowls  
10 Pigeons

4 Guinea fowl

## AT AUCKLAND ISLANDS.

12 Goats  
3 Geese12 Rabbits  
3 Pigs6 Fowls  
3 Ducks

## AT WESTERNPORT.

7 Sambur deer

## AT WIMMERA.

35 Axis deer

## AT YERING.

5 Axis deer

## AT PLENTY RANGES.

10 Pheasants.

4 Jungle fowls.

7 Guinea fowls.

## ANIMALS SENT AWAY.

## TO LONDON.

75 Kangaroos  
5 Mountain ducks  
200 Murray codfish  
22 Black swans  
20 Australian quail  
14 Eagle hawks  
85 Magpies  
4 Rosella parrots  
8 King parrots  
6 Cockatoos  
5 Dingos  
3 Talegallas  
1 Tasmanian devil26 Waterhens  
4 Kangaroo rats  
10 Wombats  
2 Cranes  
7 Wood ducks  
2 Kangaroo dogs  
4 Echidna  
26 Laughing jackasses  
40 Shell parrots  
6 Mallee pheasants  
36 Lowry parrots  
12 Opossums  
2 Emeus40 Black ducks  
40 Teal  
22 Wonga pigeons  
31 Bronze-wing pigeons  
8 Swamp magpies  
2 Iguanas  
7 Land rails  
4 Sugar squirrels  
3 Coots  
5 Native companions  
Some Yarra fish

## TO PARIS.

20 Emeus  
30 Kangaroos  
12 Black swans  
3 Cape Barren geese  
1 South Australian  
wombat  
4 Native geese3 Curlews  
1 Native crane  
8 Murray turtles  
2 Wombats  
17 Australian quail  
4 Laughing jackasses  
2 Bronze-wing pigeons8 Goatsuckers  
2 Native companions  
14 Rockhampton finches  
1 Iguana  
4 Opossums  
20 Black ducks  
20 Teal

## TO ST. PETERSEURG.

2 Kangaroos  
3 Black swans2 Laughing jackasses  
2 Wallabies

3 Emeus

## TO AMSTERDAM.

3 Water hens

6 Australian quail

## TO ROTTERDAM.

2 Cape Barren geese

2 Water hens

## TO HAMBURGII.

2 Wonga pigeons  
2 Black swans

2 Bronze-wing pigeons

2 Kangaroo rats

## TO COLOGNE.

2 Black swans  
2 Black geese

2 Curlews

2 Water hens



## TO COPENHAGEN.

2 Black swans

## TO CALCUTTA.

24 Black swans	15 Rosella parrots	6 Bronze-wing pigeons
12 Emeus	10 Kangaroos	6 Laughing jackasses
2 Eagles	4 Opossums	20 Shell parrots
6 White cockatoos	1 Dingo	52 Magpies
7 King parrots	1 Wombat	

## TO MAURITIUS.

2 Black swans	2 Eagle hawks	2 Laughing jackasses
1 Kangaroo	9 Fowls	4 Wallabies
2 Cape Barren geese	7 Magpies	

## TO BOURBON.

8 Black swans

## TO SICILY.

6 Black swans | 14 Native ducks

## TO RANGOON.

6 Black Swans

## TO JAVA.

2 Black swans	2 Cape Barren geese	1 Kangaroo
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## TO BURTENZONG.

2 Black swans	2 Cape Barren geese	1 Kangaroo
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## TO SYDNEY.

5 Angora goats	6 English wild ducks	4 Larks
2 Brush kangaroos	1 Mallee hen	4 Starlings
2 Silver pheasants	10 Blackbirds	2 Ortolans
2 Canadian geese	10 Thrushes	A number of sparrows
2 Egyptian geese		

## TO ADELAIDE.

10 Angora goats	2 Thrushes	2 Silver pheasants
2 Blackbirds	3 English pheasants	

## TO HOBART TOWN.

1 Angora goat	2 Egyptian geese
9 Native bears	Hares
Wild ducks, Indian & English	A number of sparrows.

## TO NEW ZEALAND.

3 Thrushes	4 Opossums	Indian and English
6 Magpies	2 Brace of hares	wild ducks

## TO FOO CHOW.

48 Wild rabbits	2 Kangaroo	2 Parrots
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## TO NEW CALEDONIA.

238 Sparrows	12 Laughing jackasses
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## AT MR. WILSON'S—LONGERENONG WIMMERA.

16 Ostriches	55 Angora goats
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## LIBERATED IN THE BUSH THIS YEAR.

8 Hog deer	30 Pheasants	A number of doves
10 Pea fowl	Several brace of hares	25 Skylarks
20 Guinea fowl		

A large number of hares were likewise distributed last year in various parts of the country, and upwards of 100 Angora goats were disposed of in addition to those enumerated above.

# THE PRINCIPAL TIMBER TREES

READILY ELIGIBLE FOR

## VICTORIAN INDUSTRIAL CULTURE,

*with indications of their native countries and some of their  
technologic uses.*

AN ENUMERATION OFFERED BY

**FERD. VON MUELLER,**

C.M.G., M.D., Ph.D., F.R.S., F.L.S., F.R.G.S., C.M.Z.S.,

Commander of the Order of St. Jago, Vice-President of the  
Acclimation Society of Victoria.

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This enumeration originated in a desire of the writer to place before his fellow colonists a succinct list of those trees, which in our geographic latitudes can be grown to advantage. Calls for such information arose gradually in the department of the Botanic Garden of Melbourne, not merely because it impressed itself more and more on the mind of every thoughtful settler, that the wanton waste of the native forests should be checked, but that also largely should be added to our timber riches by means of copious and multifarious introductions from abroad, and that for these introductions the widest possible scope should be allowed. Nevertheless this list is far from claiming completeness, either as a specific index, or as a series of notes on the principal technologic applicability of the trees most accessible. Indeed it may be regarded simply as a precursor of larger essays, such as the intended forest administration will gradually call forth. Meanwhile, however, this brief explanatory catalogue may facilitate locally that information, which hitherto was afforded by the authors correspondence chiefly.

It seemed beyond the scope of this writing to tabulate the trees here enumerated, in reference to climatic regions. The inhabitant of colder and moister mountains in this colony, or the settler in the hotter and more arid tracts of country, can readily foresee from the brief geographic notes given with each tree, which kind should be chosen for the spot, selected by him for wood-culture; but if doubts in this respect should arise, the needful advice will readily be offered by the writer.

Though this list was originally prepared and alluded to as an appendage to a lecture\* recently delivered at the Melbourne Industrial Museum, I was honored by my colleagues of the Council of the Acclimation Society in their giving publicity to this document along with their last annual report, the Society being quite as anxious

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\* The Application of Phytology to the Industrial Purposes of Life:

to foster the introduction and multiplication of industrial plants, as the continued acquisition and diffusion of foreign animals of utilitarian importance.

Unquestionably also, the periodical issue of essays on animals and plants, to be introduced or to be diffused, will give additional strength to the Society's labours.

Should, therefore, this small literary offer prove acceptable to the supporters of the Victorian Acclimation Society, then the writer would feel sufficiently encouraged to offer in a similar form,\* a list of other plants, recommendable here for more general cultivation; and, although such indices only to some extent contain original research, they are likely to bring together information, more condensed and more recent, than it would be attainable in costly or voluminous works of even several languages, and yet such treating perhaps only of countries with far narrower climatic zones than ours.

Possibly this publication may aid us also to render known our colonial requirements thus far abroad, while it will offer likewise some information to speed interchanges.

For our Industrial Museum and such similar institutions, as doubtless ere long on a limited scale will be connected with each Mechanics' Institute, this unpretensive treatise may help to explain the real wealth, which we possess in our unfortunately almost unguarded forests, or point out the manifold new treasures, which we should raise independently in our woodlands, while also these pages might stimulate both public and private efforts, to provide by timely thoughtfulness those increased timber resources, without which the next generations of this land can be neither hale nor prosperous.

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## I.—CONIFEROUS TREES.

### ***Araucaria Bidwilli*, Hook.\***

Bunya Bunya. Southern Queensland. A tree 150 feet in height, with a fine grained, hard and durable wood; the seeds are edible.

### ***Araucaria Brasiliensis*, A. Rich.**

Brazilian Pine. A tree, 100 feet high, producing edible seeds. Ought to be tried in our fern gullies.

### ***Araucaria Cookii*, R. Br.**

In New Caledonia, where it forms large forests. Height of tree 200 feet.

### ***Araucaria Cunninghami*, Ait.\***

Moreton-Bay Pine.—East Australia, between 14° and 32° S. latitude. The tree gets 130 feet high. The timber is used for ordinary furniture.

### ***Araucaria excelsa*, R. Br.\***

Norfolk-Island Pine.—A magnificent tree, sometimes 220 feet high, with a stem attaining ten feet in diameter. The timber is useful for ship-building and many other purposes.

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\* A short essay on such plants and trees as well was promulgated by the Philos. Society of Victoria 1858, pp. 93—105.

**Araucaria imbricata, Pav.**

Chili and Patagonia. The male tree attains only a height of 50 feet, but the female reaches 150 feet. It furnishes a hard and durable timber, as well as an abundance of edible seeds, which constitute a main article of food of the natives. Eighteen good trees will yield enough for a man's sustenance all the year round. In our lowlands of comparative slow growth, but likely of far more rapid development, if planted in our ranges.

**Callitris quadrivalvis, Vent.**

North Africa. A middling-sized tree, yielding the true Sandarac resin.

**Cephalotaxus Fortunei, Hook.**

China and Japan. This splendid yew attains a height of 60 feet, and is very hardy.

**Cryptomeria Japonica, Don.**

Japan and Northern China. A slender evergreen tree, 100 feet high. It requires forest valleys for successful growth. The wood is compact, very white, soft and easy to work.

**Cupressus Benthami, Endl.**

Mexico, at 5 to 7,000'. A beautiful tree, 60 feet high. The wood is fine grained and exceedingly durable.

**Cupressus Lawsoniana, Murr.\* (*Chamaecyparis Lawsoniana*, Parl.)**

Northern California. This is a splendid red-flowered cypress, growing 100 feet high, with a stem of 2 feet in diameter, and furnishes a valuable timber for building purposes, being clear and easily worked.

**Cupressus Lindleyi, Klotzsch.**

On the mountains of Mexico. A stately cypress, up to 120 feet high. It supplies an excellent timber.

**Cupressus macrocarpa, Hartw.\* (*C. Lambertiana*, Gord.)**

Upper California. This beautiful and shady tree attains the height of 150 feet, with a stem of 9 feet in circumference, and is one of the quickest growing of all conifers, even in poor dry soil.

**Cupressus Nutkaensis, Lamb. (*Chamaecyparis Nutkaensis*, Spach.)**

North-West America. Height of tree 100 feet. Wood used for boat-building and other purposes; the bast for mats and ropes.

**Cupressus obtusa, F. von Muell. (*Retinospora obtusa*, S. & Z.)**

Japan. Attains a height of 80 feet; stem 5 feet in circumference. It forms a great part of the forests at Nipon. The wood is white-veined and compact, assuming, when planed, a silky lustre. It is used in Japan for temples. There are varieties of this species with foliage of a golden and of a silvery-white hue.

Two other Japanese cypresses deserve introduction, namely: *Cupr. breviramea* (*Chamaecyparis breviramea*, Maxim.), and *Cupr. pendens*, (*Chamaecyparis pendula*, Maxim.)

**Cupressus pisifera, F. von Muell. (*Chamaecyparis pisifera*, S. & Z.)**

Japan. It attains a height of 30 feet, producing also a variety with golden foliage.

**Cupressus sempervirens, L.**

Common Cypress of South Europe. Height of tree up to 80 feet. It is famous for the great age it reaches, and for the durability of its timber, which is next to imperishable. At present it is much sought for the manufacture of musical instruments.



**Cupressus thurifera, Humb. B. & K.\***

Mexico; 3,000 to 4,500 feet above sea-level. A handsome pyramidal tree, upwards of 40 feet high.

**Cupressus thuyoides, Linné. (*Chamaecyparis sphaeroidea*, Spach.)**

White Cedar of North America; in moist or morassy ground. Height of tree 80 feet; diameter of stem 3 feet. The wood is light, soft, and fragrant; it turns red when exposed to the air.

**Cupressus torulosa, Don.\***

Nepal Cypress. Northern India; 4,500 to 8,000 feet above sea level. Height of tree 150 feet; circumference of stem, as much as 16 feet. The reddish fragrant wood is as durable as that of the Deodar Cedar, highly valued for furniture. The tree seems to prefer the limestone soil.

**Dacrydium cupressinum, Soland.**

New Zealand. Native name, *Rimu*; the Red Pine of the colonists. This stately tree acquires the height of 200 feet, and furnishes a hard and valuable wood. With other New Zealand conifers particularly eligible for our forest valleys. A most suitable tree for cemeteries, on account of its pendulous branches.

**Dacrydium Franklini, Hook. fil.**

Huon Pine of Tasmania; only found in moist forest recesses, and might be planted in our dense fern-tree gullies. Height of tree 100 feet; stem-circumference 20 feet. The wood is highly esteemed for ship-building and various artizan's work.

**Dammara alba, Rumph. (*D. orientalis*, Lamb.)**

Agath Dammar. Indian Archipelagus and mainland. A large tree, 100 feet high, with a stem of 8 feet in diameter; straight and branchless for two-thirds its length. It is of great importance on account of its yields of the transparent Dammar resin, extensively used for varnish.

**Dammara Australis, Lamb.\***

Kauri Pine. North island of New Zealand. This magnificent tree measures, under favourable circumstances, 180 feet in height and 17 feet in diameter of stem. The estimated age of such a tree being 700 or 800 years. It furnishes an excellent timber for furniture, masts of ships, or almost any other purpose; it yields besides the Kauri resin of commerce, which is largely got from under the stem of the tree. The greatest part is gathered by the Maories in localities formerly covered with Kauri forests; pieces, weighing 100 lbs., have been found in such places.

**Dammara macrophylla, Lindl.**

Santa Cruz Archipelagus. A beautiful tree, 100 feet high, resembling *D. alba*.

**Dammara Moorei, Lindl.**

New Caledonia. Height of tree about 50 feet.

**Dammara obtusa, Lindl.**

New Hebrides. A fine tree, 200 feet high; with a long, clear trunk; resembling *D. Australis*.

**Dammara ovata, Moore.**

New Caledonia. This tree is rich in Dammar resin.

**Dammara robusta, Moore.**

Queensland Kauri. A tall tree, known from Rockingham's Bay and Wide Bay. It thrives well even in open, exposed, dry localities at Melbourne.

**Dammara Vitiensis, Seem.**

In Fiji. Tree 100 feet high ; probably identical with Lindley's *D. longifolia*.

**Fitzroya Patagonica, Hooker fil.**

Southern parts of Patagonia and Chili. A stately tree, 100 feet high, up to 14 feet in diameter of stem. The wood is red, almost imperishable in the open air or under ground ; it does not warp, and is easy to split. It comes into commerce in boards 7 feet long, 8 inches wide,  $\frac{1}{2}$  inch thick, and is used for roofing, deals, doors, casks, &c. The outer bark produces a strong fibre used for caulking ships. Like many other trees of colder regions, it would require here to be planted in our mountain forests.

**Frenela Actinostrobus, Muell. (*Actinostrobus pyramidalis* Miq.)**

From S.W. Australia, though only a shrub, is placed here on record as desirable for introduction, because it grows on saline desert flats, where any other conifers will not readily succeed. It may become important for coast cultivation.

**Frenela Macleayana, Parl.**

New South Wales. A handsome tree of regular pyramidal growth, attaining a height of 70 feet ; the timber is valuable.

**Frenela verrucosa, A. Cunn.**

Also several other species from Victoria and other parts of Australia are among the trees, which may be utilized for binding the coast and desert sand. They all exude Sandarac.

**Ginkgo biloba, L. (*Salisburia adiantifolia*, Smith.)**

Ginkgo tree. China and Japan. A deciduous fan-leaved tree, 100 feet high, with a straight stem 12 feet in diameter. The wood is white, soft, easy to work, and takes a beautiful polish. The seeds are edible, and when pressed yield a good oil. Ginkgo trees are estimated to attain an age of 3000 years.

**Juniperus Bermudiana, L.\***

The Pencil Cedar of Bermuda and Barbadoes. This species grows sometimes 90 feet high, and furnishes a valuable red durable wood, used for boat building, furniture and particularly for pencils, on account of its pleasant odor and special fitness. Many of the plants called *Thuya* or *Biotia* *Meldensis* in gardens, belong to this species.

**Juniperus brevifolia, Antoine.**

In the Azores up to 4,800' ; a nice tree with sometimes silvery foliage.

**Juniperus Cedrus, Webb.**

A tall tree of the higher mountains of the Canary Islands.

**Juniperus Chinensis, L.\***

In temperate regions of the Himalaya, also in China and Japan. This tree is known to rise to 75 feet. Probably identical with the Himalayan Pencil Cedar (*Juniperus religiosa*, Royle) ; it is remarkable for its reddish close-grained wood.

**Juniperus communis, L.**

One of the three native coniferæ of Britain, attaining under favorable circumstances a height of nearly 50 feet, of medicinal uses ; the berries also used in the preparation of gin.

**Juniperus drupacea, Labill. Plum Juniper.**

A very handsome long-leaved Juniper, the Habhel of Syria. It attains a height of 30 feet, and produces a sweet edible fruit, highly esteemed throughout the Orient.

***Juniperus excelsa*, Bieberst.**

In Asia Minor, 2 to 6000 feet above the sea level. A stately tree, 60 feet high.

***Juniperus flaccida*, Schlecht.**

In Mexico, 5 to 7000 feet high. A tree of 30 feet in height, rich in resin, similar to Sandarach.

***Juniperus foetidissima*, Willd.**

A tall beautiful tree in Armenia and Tauria, 5000 to 6,500 feet.

***Juniperus Mexicana*, Schiede.**

Mexico at an elevation of 7000 to 11,000 feet. A straight tree, 90 feet high, stem 3 feet diameter, exuding copiously a resin similar to Sandarach.

***Juniperus occidentalis*, Hook.**

North California and Oregon, at 5000 feet. A straight tree, 80 feet high, with a stem of 3 feet diameter.

***Juniperus Phœnicea*, L.**

South Europe and Orient. A small tree, 20 feet high, yielding an aromatic resin.

***Juniperus procera*, Hochst.**

In Abyssinia. A stately tree, furnishing a hard useful timber.

***Juniperus recurva*, Hamilton.**

On the Himalayas, 10 to 12,000 feet high. A tree attaining 30 feet in height.

***Juniperus sphærica*, Lindl.**

North China. A handsome tree, 40 feet high.

***Juniperus Virginiana*, L.**

North American Pencil Cedar or Red Cedar. A handsome tree, 50 feet high, supplying a fragrant timber, much esteemed for its strength and durability; the inner part is of a beautiful red color, the outer is white; it is much used for pencils.

***Libocedrus Chilensis*, Endl.**

In cold valleys on the southern Andes of Chili, 2000 to 5000 feet. A fine tree, 80 feet high, furnishing a hard resinous wood of a yellowish color.

***Libocedrus decurrens*, Torr.**

White Cedar of California, growing on high mountains. Attains a height of fully 200 feet, with a stem 25 feet in circumference.

***Libocedrus Doniana*, Endl.**

North island of New Zealand, up to 6000 feet elevation. A forest tree 100 feet high, stem 3 feet and more in diameter. The wood is hard and resinous, of a dark reddish color, fine-grained, excellent for planks and spars.

***Libocedrus tetragona*, Endl.**

On the Andes of North Chili, 2000 to 5000 feet. This species has a very straight stem, and grows 120 feet high. The wood is quite white, and highly esteemed for various artisans' work, indeed very precious.

***Nageia (Podocarpus) amara*, Blume.**

Java, on high volcanic mountains. A large tree, sometimes 200 feet high.

***Nageia (Podocarpus) cupressina*, R. Br.**

Java and Phillipine Islands. Height of tree 180 feet, furnishing a highly valuable timber.

**Nageia (Podocarpus) dactyloides, A. Rich.**

In swampy ground of New Zealand; the "Kahikatea" of the Maories, called White Pine by the colonists. Height of tree 150 feet; diameter of stem 4 feet. The white sweet fruit is eaten by the natives; the wood is pale, close-grained, heavy, and among other purposes, used for building canoes.

**Nageia (Podocarpus) ferruginea, Don.**

Northern parts of New Zealand. The Black Pine of the colonists; native name "Miro." Height of tree 80 feet; it produces a dark red resin of a bitter taste; the wood is of a reddish color, very hard.

**Nageia (Podocarpus) Lamberti, Klotzsch.**

Brazils. A stately tree, yielding valuable timber.

**Nageia (Podocarpus) Purdieana, Hook.**

Jamaica, at 2500 to 3500 feet. This quick-growing tree attains a height of 100 feet.

**Nageia (Podocarpus) spicata, Br.**

Black Rue of New Zealand. Tree 80 feet high; wood pale, soft, close and durable.

**Nageia (Podocarpus) Thunbergii, Hook.**

Cape of Good Hope. A large tree, known to the colonists as "Geelhout"; it furnishes a splendid wood for building.

**Nageia (Podocarpus) Totara, Don.\***

New Zealand. A fine tree, 120 feet high, with a stem of 20 feet in circumference; it is called mahogany pine by the colonists. The reddish close-grained and durable wood is valuable both for building and for furniture, and is also extensively used for telegraph posts; it is considered the most valuable timber of New Zealand. Many other tall timber trees of the genus *Podocarpus* or *Nageia* occur in various parts of Asia, Africa and America, doubtless all desirable, but the quality of their timber is not well known, though likely in many cases excellent. *Nageia* is by far the oldest published name of the genus.

**Phyllocladus rhomboidalis, Rich.**

Celery Pine of Tasmania. A stately tree up to 60 feet high, with a stem of 2 to 6 feet in diameter. The timber is valuable for ships' masts. It will only grow to advantage in deep forest valleys.

**Phyllocladus trichomanoides, Don.**

Celery Pine of New Zealand, northern island; it is also called Pitch Pine by the colonists. This tree attains a height of 70 feet, with a straight stem of 3 feet in diameter, and furnishes a pale close-grained timber, used particularly for spars and planks; the Maories employ the bark for dying red and black.

**Pinus Abies, Du Roi.\* (*Pinus Picea* Linné.)**

Silver Fir, Tanne. In Middle Europe up to 50° N. Lat., forming dense forests. A fine tree, already the charm of the ancients, attaining 200 feet in height, and 20 feet in circumference of stem, reaching the age of 300 years. It furnishes a most valuable timber for building, as well as furniture, and in respect to lightness, toughness and elasticity it is even more esteemed than the Norway Spruce, but is not so good for fuel or for charcoal. It also yields a fine white resin and the Strassburg turpentine, similar to the Venetian.

**Pinus Abies var. Cephalonica, Parlatores. (*Pinus Cephalonica*, Endl.)**

Greece, 3 to 4000 feet above the sea. A tree 60 feet high, with a stem circumference of 10 feet. The wood is very hard and durable, and much esteemed for building.



**Pinus Abies var. Nordmanniana, Parlature.** (*P. Nordmanniana*, Steven.)

Crimea and Circassia, 6000 feet above the sea. This is one of the most imposing firs, attaining a height of 100 feet, with a perfectly straight stem. It furnishes a valuable building timber.

The Silver Fir is desirable for our mountain forests.

**Pinus alba, Ait.**

White Spruce. From Canada to Carolina, up to the highest mountains. It resembles *P. Picea*, but is smaller, at most 50 feet high. Eligible for our alpine country.

**Pinus Alcocquiiana, Parlature.**

Japan, at an elevation of 6 to 7000 feet. A fine tree, with very small blue-green leaves; the wood is used for light household furniture.

**Pinus amabilis, Dougl.**

Californian Silver Fir. North California, at an elevation of 4000 feet. A handsome fir, 200 feet high, circumference of stem 24 feet; the stem is naked up to 100 feet.

**Pinus Australis, Michx.\***

Southern or Swamp Pine, also called Georgia, Yellow Pitch or Broom Pine. In the Southern States of N. America. The tree attains a height of 70 feet. It furnishes a good timber for furniture and building. It is this tree, which forms chiefly the extensive pine barrens of the United States, and yields largely the American turpentine.

**Pinus Ayacahuite, Ehrenb.** (*P. Loudoniana*, Gord.)

In Mexico, at an elevation of 8000 to 12,000 feet. An excellent pine, 100 to 150 feet high, with a stem diameter of 3 to 4 feet, yielding a much esteemed white or sometimes reddish timber.

**Pinus balsamea, L.**

Balsam Fir, Balm of Gilead Fir. Canada, Nova Scotia, New England. An elegant tree, 40 feet high, which with *Pinus Fraseri* yields the Canada Balsam, the well-known oleo-resin. The timber is light, soft and useful for furniture. It thrives best in cold swampy places. Eligible for our alps.

**Pinus Canadensis, L.**

Hemlock Spruce. In Canada and over a great part of the United States, on high mountains. A very ornamental tree, 100 feet high, with a white cross-grained and inferior wood. The tree, however, is extremely valuable on account of its bark, which is much esteemed as a tanning material; it is stripped off during the summer months. The young shoots are used for making spruce beer.

**Pinus Canariensis, C. Smith.\***

Canary Pine. Canary Islands, forming large forests at an elevation of 5 to 6000 feet. A tree 70 feet high, with a resinous durable very heavy wood, not readily attacked by insects. It thrives well in Victoria, and shows celerity of growth.

**Pinus Cedrus, L.**

Cedar of Lebanon. Together with the Atlas variety on the mountains of Lebanon and Taurus, also in N. Africa. The tree grows to a height of 100 feet, and attains a very great age; the wood is of a light reddish color, soft, easy to work, and much esteemed for its durability.

**Pinus Cedrus var. Deodara.\***

Deodar Cedar. On the Himalaya mountains, 4 to 12,000 feet above sea level. A majestic tree, 150 feet high, and sometimes 30 feet in circumference of stem. The wood is of a whitish yellow color, very close-grained and resinous, and furnishes one of the best building timbers known; it must, however, not be felled too young. The tree also yields a good deal of resin and turpentine.

**Pinus Cembra, L.**

On the European Alps, also in Siberia and Tartary. The tree attains a height of 60 feet; the wood is of a yellow color, very soft and resinous, of an extremely fine texture and is extensively used for carving and cabinet work. The seeds are edible, and when pressed yield a great quantity of oil. A good turpentine is also obtained from this pine.

**Pinus cembroides, Zucc. (*P. Llaveana*, Schiede and Deppe.)**

Mexican Swamp Pine. A small tree, 30 feet high, growing at an elevation of 8000 to 10,000 feet. The timber is not of much use, but the seeds are edible and have a very agreeable taste.

**P. Cilicica, Ant. and Kotsch.**

Cilician Silver Fir. Asia Minor. 4000 to 6500 above sea level. A handsome tree of pyramidal growth 160 feet high. The wood is very soft and used extensively for the roofs of houses, as it does not warp.

**Pinus contorta, Dougl.**

On high damp ranges in California, attaining 50 feet in height. It is valuable as a shelter tree in stormy localities.

**Pinus Coulteri, Don.**

California, on the eastern slope of the coast range at an elevation of 3000 to 4000 feet. A pine of quick growth, attaining a height of 75 feet; it has the largest cones of all pines.

**Pinus Douglasii, Sabine.\***

Oregon Pine. N.W. America forming very extensive forests. A large conical shaped tree, up to 300 feet in height, with a stem of 2 to 10 feet diameter. Only in a moist forest climate of rapid growth.

**Pinus dumosa, Don (*P. Brunoniana* Wall.)**

Bootan, Sikkim and Nepal, 10,000 feet above sea level. A very ornamental fir, rising to 70 or 80 feet.

**Pinus excelsa, Wall.\***

The Lofty or Bootan Pine. Himalaya, forming large forests at from 6000 to 11,500 feet elevation. A fine tree, 150 feet high, furnishing a valuable, close-grained, resinous wood, as well as a good quantity of turpentine.

**Pinus Fortunei, Parlatore.**

China, in the neighbourhood or Foochowfoo. A splendid tree, 70 feet high, somewhat similar in habit to *P. Cedrus*.

**Pinus Fraseri, Pursh.**

Double Balsam Fir. On high mountains of Carolina and Pennsylvania. This tree, which gets about 20 feet high, yields with *P. balsamea* Canada Balsam.

**Pinus Gerardiana, Wall.**

Nepal Nut Pine. In the N.E. parts of the Himalaya at an elevation of 10,000 to 12,000 feet, forming extensive forests. The tree gets 50 feet high, and produces very sweet edible seeds, also turpentine.

**Pinus grandis, Dougl.**

Great Silver Fir of North California. A splendid fir, 200 feet high and upwards, growing best in moist valleys of high ranges; the wood is white and soft.

**Pinus Halepensis, Mill.\***

Aleppo Pine. South Europe and North Africa. This well known pine attains a height of 80 feet with a stem of from 4 to 5 feet in diameter. The timber of young trees is white, of older trees of a dark color; it is principally esteemed for ship building, but also used for furniture. The tree yields a kind of Venetian turpentine, as well as a valuable tar. It thrives well in waterless rocky places, also on the sandy sea coast. *P. maritima* is a variety of this species. Content with the poorest and driest localities, and rapid of growth.

**Pinus Hartwegii, Lindl.**

Mexico, 9000 to 13,000 feet above sea level. A pine, 50 feet in height, with a very durable wood of a reddish color; it yields a large quantity of resin.

**Pinus Larix, L.**

Common Larch; deciduous. On the European Alps up to 7000 feet. It attains a height of 100 feet, sometimes rising even up to 160 feet, and produces a valuable timber of great durability, which is used for land and water buildings, and much prized for ship building. The bark is used for tanning and dyeing. The tree is of great importance for its yield of the Venetian turpentine, which is obtained by boring holes into it in spring; these fill during the summer, supplying from  $\frac{1}{2}$  to  $\frac{3}{4}$  pint of turpentine. In Piedmont, where they tap the tree in different places and let the liquid continually run, it is said that from 7 to 8 may be obtained in a year, but the wood suffers through this operation. *P. L. var. Rossica*, Russian Larch, grows principally on the Altai mountains from 2,500 to 5,500 feet above sea level; it attains a height of 80 feet. The species would be important for our upland country.

**Pinus leiophylla, Schiede and Deppe.**

7000 to 11,000 feet up on the mountains of Mexico. A tree 90 feet high. The wood is excessively hard.

**Pinus leptolepis, Sieb. and Zucc.**

Japan Larch. In Japan, between 35° and 48° N. lat., up to an elevation of 9000 feet. The timber is highly valued by the Japanese.

**Pinus longifolia, Roxb.\***

Emodi Pine or Cheer Pine. On the Himalaya mountains, from 2000 to 7000 feet. A handsome tree with a branchless stem of 50 feet; the wood is resinous and the red variety useful for building; it yields a quantity of tar and turpentine. The tree stands exposure and heat well.

**Pinus Massoniana, Lamb. (*P. Sinensis*, Lamb.)**

China and Japan. This pine attains a height of 60 feet, and supplies a resinous tough and durable wood, used for buildings and furniture. The roots, when burned with the oil of *Brassica Orientalis*, furnish the Chinese Lampblack.

**Pinus Menziesii, Dougl.**

North West America. A very handsome tree, which grows to a height of 70 feet, and furnishes a valuable timber; it thrives best in moist ground.

**Pinus Hudsonica, Poir. (*P. Banksiana*, Lamb.)**

Grey Pine; North America, up to 64° N. lat. Height of tree 40 feet, in the cold north only a shrub. The wood is light, tough and easily worked.

**Pinus Jeffreyi, Murr.**

North California, on a sterile sandy soil. A noble pine, 150 feet high; stem 4 feet thick.

**Pinus Kaempferi, Lamb.**

Chinese Larch; also called Golden Pine. China. This is the handsomest of all the larches. It is of quick growth, and attains a height of 150 feet. The leaves, which are of a vivid green during spring and summer, turn to a golden yellow in autumn. The wood is very hard and durable.

**Pinus Koraiensis, Sieb. and Zucc.**

China and Japan. A handsome tree, 30 to 40 feet high, producing edible seeds.

**Pinus Lambertiana, Dougl.**

Giant or Sugar Pine. North-west coast of America; mostly in great altitudes. A lofty tree, upwards of 300 feet high, with a straight, naked stem of from 20 to 60 feet in circumference. It thrives best in sandy soil, and produces a soft, white, straight grained wood, which for inside work is esteemed above any other pine in California, and furnished in large quantities. The cones are 18 inches long; the seeds are edible, and used as food by the natives. Would come best to perfection in the humid regions of our higher mountains.

**Pinus Laricio, Poir.\***

Corsican Pine. South Europe. It attains a height of 120 feet. The wood is white, towards the centre dark, very resinous, coarse-grained, elastic and durable, and much esteemed for building, especially for waterworks. There are three main varieties of this pine, viz.: P. L. Poiretiana, in Italy; P. L. Austriaca, in Austria; P. L. Pallasiana, on the borders of the Black Sea. The tree grows best in calcareous soil, but also in poor, sandy soil, where, however, the timber is not so large nor so good. It yields all the products of P. silvestris, but in greater quantities, being perhaps the most resinous of all pines.

**Pinus Mertensiana, Bong.**

Californian Hemlock Spruce. North-west America. The wood is white and very soft, but is often used for building. The tree is from 100 to 150 feet high, by a stem diameter of 4 to 6 feet.

**Pinus mitis, Michx.**

Yellow Pine of North America. In dry sandy soil, attaining a height of 60 feet. Wood durable, fine-grained, moderately resinous, valuable for flooring.

**Pinus monophylla, Torr. and Frem.**

Stone or Nut Pine of California, on the Sierra Nevada and Cascade Mountains, 6,500 feet. The seeds are edible, of an almond-like taste, and consumed in quantity by the natives. Height of tree only 35 feet; thickness of stem 8 to 10 inches.

**Pinus montana, Du Roi. (P. Pumilio Hænke.)**

On the Alps and Carpathians up to the highest points, covering large tracts, and thriving on the poorest soil. The tree, which grows about 25 feet high, in favourable localities 50, yields much oil of turpentine. The wood is used for carving and for firewood. Only available to advantage for our highlands.

**Pinus Montezumae, Lamb. (P. Devoniana, Lindl.) (P. Grenvilleæ, Gord.)**

Mexico. A handsome Pine, 80 feet high; wood white, soft and resinous.



**Pinus monticola, Dougl.**

California, at an elevation of 7,000 feet. It thrives best in poor soil of granite formation, and attains the height of 200 feet, with a stem of  $1\frac{1}{2}$  to 4 feet thick. The wood is white, close-grained.

**Pinus muricata, Don.**

Bishop's Pine. California. Found up 7,500 feet. This pine grows to about 40 feet.

**Pinus nigra, Ait.**

Black Spruce. North-East America. Occurring extensively between  $44^{\circ}$  and  $53^{\circ}$  N. latitude. This tree, which is termed Double Spruce by the Canadians, attains a height of 70 feet, and furnishes a light elastic timber of white colour, excellent for yards of ships. The young shoots are used for making spruce-beer, and the small roots serve as cords. It likes swampy forest land.

**Pinus nobilis, Dougl.**

Noble White Fir. North west coast of America, on the Columbia River and the mountains of North California, where it forms extensive forests at 6 to 8,000 feet. A majestic tree, 150 to 200 feet high, with regular horizontal branches. It furnishes a valuable timber for building.

**Pinus orientalis, L.**

Sapindus Fir. In Asia Minor, at 4,000 feet. The tree rises to about 80 feet, and resembles somewhat the Norway Spruce. The wood is exceedingly tough and durable.

**Pinus parviflora, Sieb.**

In Japan. It only gets about 25 feet high; but is much used as an avenue tree; wood for fine furniture and boat-building.

**Pinus Pattoniana, Parl.**

California; 5 to 6,000 feet above sea-level. A very fine fir, 300 feet high, with a perfectly straight stem. The wood is hard, of a reddish colour, with handsome veins; but poor in resin.

**Pinus patula, Schiede and Deppe.**

In Mexico; at an elevation of 8 to 9,000 feet. A graceful pine, 80 feet high.

**Pinus pendula, Soland. (*P. microcarpa*, Lamb.)**

Small-coned American Larch; Black Larch or Tamarack. Frequent in Vermont and New Hampshire. A pine of pyramidal growth, 100 feet high. The timber is white, heavy, resinous, and as highly valued as that of the Common Larch.

**Pinus picea, Du Roi.\* (*P. Abies*, L.)**

Norway Spruce, Fichte. Middle and Northern Europe and Northern Asia; rising from the plains to an elevation of 4,500 feet, and forming extensive forests. The tree attains a height of 150 feet or even more, and furnishes an excellent timber for building and furniture; commonly known under the name of White Deal. It also produces the Burgundy Pitch in quantity, while the bark is used for tanning. Though enduring our dry summers, this spruce would have to be restricted for timber purposes to the damp mountains.

**Pinus Pinaster, Soland.\***

Cluster Pine. On the shores of the Mediterranean. The tree is of quick growth, and rises to 60 feet in height; the wood is soft and resinous; it yields largely the French turpentine. Among the best pines for consolidation of sandy coast land, and converting rolling sands into pasture and agricultural land. For ease of rearing and rapidity of growth, one of the most important of all pines.

**Pinus Pinceana, Gord.**

Mexico, up to 9000 feet above sea level. A very remarkable pine, having drooping branches like the Weeping Willow; 60 feet high. Most desirable for cemeteries.

**Pinus Pindrow, Royle.**

In great abundance on the spurs of the Himalaya mountains, 8 to 12,000 feet above the sea level. A fine straight stemmed tree, 100 feet high.

**Pinus Pinea, L.\***

Stone Pine. Frequent in the countries bordering on the Mediterranean; height of tree 60 feet; the wood is whitish, light, but full of resin, and much used for buildings, furniture and ships. The seeds are edible, somewhat resembling almonds, but of a taste resinous though not disagreeable; they only ripen in their third year. This pine grows as easily and almost as quickly as the Cluster Pine.

**Pinus Pinsapo, Boiss.**

Spanish Fir. In Spain, on the Sierra Nevada, 4 to 6000 feet. A tree of 60 feet high, with branches from the ground.

**Pinus ponderosa, Dougl.\* (*P. Benthamiana*, Hartw.)**

Yellow or Pitch Pine of the mountains of N.W. America. Height of tree up to 225 feet, with a stem of 24 feet in circumference, of comparatively quick growth; the wood is heavy, and for general purposes preferred to that of any other pine. Has proved well adapted even for dry localities in Victoria.

**Pinus Pseudo-Strobus, Lindl.\***

In Mexico. This tree is superior in appearance to any other Mexican pine; height 80 feet.

**Pinus Pyrenaica, Lapeyr.**

In the South of Spain and on the Pyrenees. A fine ornamental tree of quick growth, 80 feet high; the wood is white and dry, poor in resin.

**Pinus radiata, Don.\* (*P. insignis*, Dougl.)**

California. A splendid pine, fully 100 feet high, with a straight stem 2 to 4 feet in diameter. It is of remarkably rapid growth, a seedling, one year old, being strong enough for final transplantation; the wood is tough, and much sought for boat-building and various utensils.

**Pinus religiosa, Humb.**

Oyamel Fir. Mexico, 4 to 9000 feet above the sea level. A magnificent tree with silvery leaves, growing 100 feet high; stem 6 feet in diameter; the wood is particularly well fit for shingles.

**Pinus resinosa, Soland.**

Red Pine. N. America, principally in Canada and Nova Scotia. It gets 80 feet high and 2 feet in diameter; the wood is red, fine-grained, heavy and durable, not very resinous, and is used for ship-building.

**Pinus rigida, Mill.\***

American Pitch Pine. From New England to Virginia. It grows to a height of 80 feet; the timber, when from good soil, is hard and resinous and used for building; but the tree is principally important for its yield of turpentine, resin, pitch and tar.

**Pinus rubra, Lamb.**

Hudson's Pine, Red Spruce. Nova Scotia, Newfoundland and other northern parts of the American Continent. A straight slender tree, 70 feet high; the wood is of a reddish color and highly esteemed

**Pinus Sabiniana, Dougl.\***

Californian Nut Pine or White Pine. Most frequent on the western slopes of the Rocky Mountains, intermixed with other trees; 150 feet high; stem 3 to 5 feet in diameter; the wood is white and soft; the clustered heavy cones attain a length of 1 foot; the seeds are edible. Proves in dry localities of Victoria to be of quick growth.

**Pinus serotina, Michx.**

Pond Pine. Southern States of North America, in black morassy soil, principally near the sea coast; it is 50 feet high, stem 18 inches in diameter; the wood is soft.

**Pinus silvestris, L.\***

Scotch Fir, Foehre. Middle and Northern Europe, up to 70° N. Lat., and North Asia, thriving best in sandy soil. A very valuable tree, fully 100 feet high, growing to the age of about 120 years. The Red Baltic, Norway, or Riga deals are obtained from this pine, as well as a large portion of the European pine tar. Proves well adapted even for the drier parts of Victoria.

**Pinus Sibirica, Turcz. (*P. Pichta*, Fisch.)**

Siberian Pitch Fir. On the Altai Mountains; it reaches a height of 50 feet.

**Pinus Strobus, L.\***

Weymouth Pine or American White Pine. N.E. America, growing on any soil, but preferring swampy ground; it is found 160 feet high, with a stem of 4 to 6 feet in diameter; the wood is soft, white, light, free of knots, almost without resin, easy to work, and much esteemed for masts; it yields American turpentine and gallipot.

**Pinus Tæda, L.**

Frankincense or Loblolly Pine. Florida and Virginia, in sandy soil, attaining a height of 80 feet; the timber is esteemed for ship-building. It also yields turpentine in good quantity, though of inferior quality.

**Pinus tenuifolia, Benth.**

Mexico, at an elevation of 5000 feet, forming dense forests; height of tree 100 feet, stem up to 5 feet in diameter.

**Pinus Teocote, Cham. and Schlecht.**

Okote or Torch Pine. Mexico, 5 to 8000 feet above the sea level. Tree 100 feet high, stem 3 to 4 feet in diameter; the wood is resinous and durable.

**Pinus Tsuga, Ant.**

In the northern provinces of Japan, 6 to 9000 feet above the sea. The tree gets only 25 feet high; its timber is highly esteemed for superior furniture, especially by turners.

**Pinus Webbiana, Wallich.\***

King Pine, Dye Pine. On the Himalaya Mountains, at an elevation of 12 to 13,000 feet. A splendid fir 70 to 80 feet high, with a stem diameter of generally 3 to 4 feet, but sometimes even 10 feet. The wood is of a white color, soft, coarse-grained and very resinous; the natives extract a splendid violet dye from the cones.

**Sciadopitys verticillata, Sieb.**

The lofty and curious Umbrella Fir of Japan, 140 feet high; resists severe frosts; wood white and compact.

**Sequoia sempervirens, Endl.\* (*Taxodium sempervirens*, Lamb.)**

Red Wood or Bastard Cedar of N. W. America, chiefly California. A splendid tree, 300 feet high, occasionally with a diameter of the stem of 55 feet. The wood is reddish, close-veined, but light and brittle. One of the most colossal trees of the globe.

**Sequoia Wellingtonia, Seem.\*** (*Wellingtonia gigantea*, Lindl.)

Mammoth Tree. California, up to 5000 feet above the sea. This, the biggest of all trees, attains a stem of 320 feet in length and 112 feet in circumference, the oldest trees being estimated at 1100 years; the total height of a tree will occasionally be 450 feet; a stem broken at 300 feet had yet a diameter of 18 feet. The wood is soft and white when felled, afterwards it turns red.

**Taxodium distichum, Rich.\***

Virginian Swamp or Bald Cypress. In swampy places of North America. A large and valuable tree, 100 feet high, with a stem circumference of sometimes 40 feet, of rapid growth, with deciduous foliage like that of the Larch and Ginkgo; it is found fossil in the miocene formation of many parts of Europe. The wood is fine-grained, hard and durable; it yields an essential oil and a superior kind of turpentine. Useful for avenues on swampy margins of lakes or river banks.

**Taxodium mucronatum, Ten.**

The famed Montezuma Cypress of Mexico, 120 feet high, with a trunk 44 feet in circumference; it forms extensive forests between Chapultepec and Tescuco.

**Taxus baccata, L.**

Yew. Middle and South Europe and Asia, at 1000 to 4000 feet elevation. Generally a shrub, sometimes a tree 40 feet high, which furnishes a yellow or brown wood, exceedingly tough, elastic and durable, and much esteemed by turners. The tree is of very slow growth, and reaches a great age, perhaps several thousand years; some ancient ones are known with a stem of fifty feet in girth.

**Taxus brevifolia, Nuttall.** (*T. Lindleyana*, Laws.)

N. W. America. Western Yew. A stately tree, 75 feet high, with a stem of 5 feet in circumference. The Indians use the wood for their bows.

**Thuja gigantea, Nutt.**

N. W. America, on the banks of the Columbia River. The Yellow Cypress of the colonists. A straight, graceful tree, 200 feet high, furnishing a valuable building timber of a pale or light yellow color.

**Thuja occidentalis, L.**

N. America, particularly frequent in Canada. A fine tree, 70 feet high; the wood is reddish or yellowish, fine-grained, very tough and resinous, and well fit for building, especially for water work. The shoots and also an essential oil of this tree are used in medicine; the bast can be converted into ropes.

**Thuyopsis dolabrata, Sieb and Zucc.**

Japan. A majestic tree, furnishing an excellent hard timber of a red color.

**Torreya Californica, Torr.** (*T. myristica*, Hooker.)

In California. Tree 80 feet high.

**Torreya grandis, Fortune.**

China. A tree 60 feet high, with an umbrella-shaped crown; it produces good timber.

**Torreya nucifera, S. and Z.** (*Caryotaxus nucifera*, Zucc.)

Japan. Height of tree about 20 feet. From the nuts the Japanese press an oil, used as an article of food.



**Torreya taxifolia**, Arnott.

Florida. A tree 50 feet in height, with a firm, close-grained, durable wood of a reddish color.

**Widdringtonia juniperoides**, Endl.

South Africa, 3000 to 4000 feet above sea level. A middling sized tree, rich in resin.

## II.—MISCELLANEOUS TREES, NOT CONIFEROUS.

**Acacia acuminata**, Benth.

A kind of Myall from Western Australia, attaining a height of 40 feet.

**Acacia decurrens**, Willd. (*A. mollissima*, Willd. *A. dealbata*, Link.)

The Black Wattle or Silver Wattle. From the eastern part of S. Australia, through Victoria and N. S. Wales, to the southern part of Queensland, in open plains a small or middle sized tree, in deep forest recesses a lofty tree, of singularly rapid growth. Its wood can be used for staves and many other purposes, but its chief use would be to afford the first shelter, in treeless localities, for raising forests. Its bark, rich in tannin, and its gum, not dissimilar to Gum Arabic, render this tree also important. Other quick growing trees, useful in various ways, growing in any soil and enduring drought, can be used simultaneously, by mere dissemination, in ploughed ground, for dense temporary belts of shelter, or for quick yielding fuel plantations, such as *Acacia pycnantha*, *A. lophantha*, *Casuarina quadrivalvis*, *Casuarina suberosa*, *Eucalyptus melliodora*, *Eucalyptus viminalis* and many other Eucalypts, all easily growing from seed.

**Acacia homalophylla**, Cunn.

The Victorian Myall, extending into the deserts of N.S. Wales. The dark brown wood is much sought for turner's work on account of its solidity and fragrance; perhaps its most extensive use is in the manufacture of tobacco pipes. Never a tall tree.

**Acacia Melanoxylon**, R. Br.

The well known Blackwood of our river flats and moist forest valleys, passing also under the inappropriate name of Lightwood. In irrigated valleys of deep soil the tree will attain a height of 80 feet, with a stem several feet in diameter. The wood is most valuable for furniture, railway carriages, boat-building, casks, billiard tables, pianofortes (for sound-boards and actions), and numerous other purposes. The fine-grained wood is cut into veneers. It takes a fine polish, and is considered equal to the best Walnut. Our best wood for bending under steam. For further details refer to the volumes of the Exhibitions of 1862 and 1867.

**Acer campestre**, L.

Extends from Middle Europe to North Asia. Height 40 feet, in shelter and deep soil; the yellow and purple tint of its foliage in autumn render the tree then particularly beautiful. The wood is compact and fine-grained, and sought for choice furniture. The tree can be trimmed for hedge growth. Comparatively quick of growth, and easily raised from seed. These remarks apply to almost all kinds of Maples.

**Acer dasycarpum**, Ehrhart.

The Silver Maple of North America. Likes rather a warmer climate than the other American Maples, and therefore particularly desirable for us here. Height 50 feet; wood pale and soft, stem sometimes 9 feet in diameter.

**Acer macrophyllum, Pursh.**

Large Oregon Maple. Tree 90 feet high, of quick growth, stem 16 feet in circumference; wood whitish, beautifully veined.

**Acer Negundo, L.**

The Bos Elder of North America. A tree, deciduous like the rest of the Maples; attains a height of about 50 feet, and is rich in saccharine sap. Proved well adapted for our country.

**Acer palmatum, Thunb.**

This beautiful tree with deeply cleft leaves is indigenous to Japan, where various varieties with red and yellow tinged leaves occur. Should it be an aim to bring together all the kinds of Maples, which could be easily grown in appropriate spots of Victoria, then Japan alone would furnish 25 species.

**Acer platanoides, L.**

The Norway Maple, extending south to Switzerland, 70 feet high. The pale wood much used by cabinetmakers.

**Acer Pseudo-platanus, L.**

The Sycamore Maple or British Plane. Attains a height of over 100 feet. The wood is compact and firm, valuable for various implements, instruments and cabinet work. It furnishes like some other maples a superior charcoal.

**Acer rubrum, L.**

The Red Maple, North America. A tree attaining 80 feet, fond of swampy places; wood close-grained. The trunk when twisted furnishes also curled maple wood. Grows well with several other maples, even in dry open localities of this part of Australia, although the foliage may somewhat suffer from our hot winds.

**Acer saccharinum, Wang.\***

One of the largest of the maples. In the colder latitudes of North America, 80 feet high. Wood of rosy tinge, when knotty or curly furnishes the Birdseye and curly Maplewood. In the depth of winter the trees, when tapped, will yield the saccharine fluid, which is so extensively converted into maple sugar, each tree yielding 2 to 4 lb. a year. The trees can be tapped for very many years in succession, without injury. The Sugar Maple is rich in potash. Numerous other maples exist, among which as the tallest may be mentioned, *Acer Creticum*, L., of South Europe, 40 feet; *A. laevigatum*, *A. sterculiaceum* and *A. villosam*, Wallich, of Nepal, 50 feet; *A. pictum*, Thunb., of Japan, 30 feet.

**Æsculus Hippocastanum, L.**

Indigenous to Central Asia. One of the most showy of deciduous trees, more particularly when during spring "it has reached the meridian of its glory, and stands forth in all the gorgeousness of leaves and blossoms." Height 60 feet. It will succeed in sandy soil on sheltered spots; the wood adapted for furniture; the seeds a food for various domestic animals; the bark a good tanning material. Three species occur in Japan, and several, but none of great height, in North America and South Asia.

**Ailantus glandulosa, L.**

S.E. Asia. A hardy deciduous tree, 60 feet high, of rather rapid growth, and of very imposing aspect in any landscape. Particularly valuable on account of its leaves, which afford food to a silkworm (*Bombyx Cynthia*), peculiar to this tree; wood pale yellow, of silky lustre when planed, and therefore valued for joiners' work. In South Europe planted for avenues.

**Alnus glutinosa, Gaertn.**

The ordinary Alder. Throughout Europe and extra tropical Asia, 70 feet high; well adapted for river banks; wood soft and light, turning red, furnishing one of the best charcoals for gunpowder; it is also durable under water, and adapted for turners and joiner's work. *A. incana* Willd. is an equally high and allied species.

**Amyris terebinthifolia, Tenore.**

Brazil. Is here perfectly hardy, and is content in dry ground without any irrigation. It proved one of the best among the smaller avenue trees, is beautifully spreading and umbrageous, and probably of medicinal value.

**Angophora intermedia, Cand.**

South East Australia. This is the best of the Angophoras, attaining a height of 50 feet, and growing with the rapidity of an Eucalyptus, but being more close and shady in its foliage. It would be one of our best trees to line public roads, and to effect shelter plantations.

**Baloghia lucida, Endl. (*Codiaeum lucidum*, J. M.)**

East Australia. A middle sized tree. The sap from the vulnerated trunk forms, without any admixture, a beautiful red indelible pigment.

**Betula alba, L.\***

The ordinary Birch of Europe and extratropical Asia. It attains a height of 80 feet, and would here thrive best in moist glens of the ranges, or in the higher regions of our mountains, where it would form up at the Alpine Zone excellent shelter plantations. The durable bark serves for roofing. Wood white, turning red. The oil of the bark is used in preparing the Russian leather.

**Betula nigra, L.**

The Black or River Birch of North America. One of the tallest of Birches. If grown on the banks of a limpid stream, it will bear intense heat. The wood is compact, of a light colour.

**Betula papyracea, Ait.**

The Paper Birch of North America. A larger tree than *B. alba*, with a fine-grained wood and a tough bark; much used for portable canoes. It likes a cold situation.

**Betula lenta, Willd.**

The Cherry Birch of North America. A tree of middle size, liking moist ground. Bark aromatic. Wood rose-coloured or dark, fine-grained, excellent for furniture. Several Birches occur in Japan, which might well be tried here.

**Carpinus Betulus, L.**

The Hornbeam. A tree of 80 feet high. Middle and South Europe. Wood pale, of a horny toughness and hardness, close-grained, but not elastic. This tree would serve to arrest the progress of bushfires, if planted in copses or hedges like willows and poplars around forest plantations. A smaller species, *Carpinus Americana*, Mich., yields the Ironwood of North America. Four species occur in Japan (*C. cordata*, *C. erosa*, *C. laxiflora*, *C. japonica* (Blume). *Carpinus viminea* (Wallich) is a species with durable wood from the middle regions of Nepal.

**Carya alba, Nuttall.\***

The Shellbark-Hickory. A deciduous tree, 90 feet high, which delights in rich forest soil; a native of North America. Wood strong, elastic, and tenacious, but not very durable. Yields the main supply of Hickory nuts. All the hickories are extensively used in North America for hoops.

**Carya amara, Nuttall.**

The Bitternut Tree or Swamp Hickory. A tree, 80 feet high, in swampy grounds of North America. Wood less valuable than that of other Hickories.

**Carya glabra, Torrey.\* (*Carya porcina*, Nuttall.)**

The Hognut Tree. A tree, 80 feet high, in forest land of North America. Wood very tough; the heart-wood reddish or dark-coloured; much used for axletrees and axehandles.

**Carya oliviformis, Nuttall.\***

The Pecan Nut Tree. A lofty tree, fond of river banks in North America.

**Carya sulcata, Nuttall.\***

The Furrowed Hickory and Shellbark Hickory of some districts; also Shagbark Hickory. A tree, 80 feet high, in damp woods of North America. Heart-wood pale-coloured. Seed of sweet pleasant taste.

**Carya tomentosa, Nuttall.\***

The Mocker Nuttree or White Heart Hickory. A big tree of North America. Likes forest soil, not moist. Heart-wood pale-coloured, remarkable for strength and durability. Seeds very oily. Nut small, but sweet. A variety produces nuts as large as an apple.

**Castanea sativa, Miller.\* (*C. vesca* Gærtner.)**

The Sweet Chesnut Tree. South Europe and temperate Asia, as far as Japan, and a variety with smaller fruits extending to North America. It attains an enormous age; at Mount Etna an individual tree occurs with a stem 204 feet in circumference. The wood is light and coarse-grained; the importance of the tree rests on its adaptability for shade plantations, its nutritious nuts and timber value.

**Castanopsis argentea, A. Candolle.**

A lofty tree in the mountains of India, produces also edible chesnuts. Other species of the genus *Castanopsis* are valuable.

**Casuarina glauca, Sieber.**

The Desert Sheoak, widely distributed through Australia, but nowhere in forest-like masses. This species attains, in favourable places, a height of 80 feet. Its hard durable wood is valuable. Important for its rapid growth, resistance to exposure for shelter plantation, and a speedy supply of fuel, a remark which applies also to the following species.

**Casuarina quadrivalvis, Labillard.**

The Coast Sheoak of South-east Australia, but not merely living in coast sand, but also on barren places up to the hills inland. Height to 60 feet. The male tree is very eligible for avenues, the foliage of the species being drooping. Cattle are fond of the foliage. For arresting the ingress of coast sand by belts of timber, this is one of the most important trees. It produces, like other Casuarinas, seeds early and copiously, and is easily raised.

**Casuarina suberosa, Willd.**

The Erect Sheoak of South East Australia. Height to 40 feet. A beautiful shady species. *Casuarina trichodon* (Miq.), *C. Fraseriana*, (Miq.), and *C. Huegeliana* (Miq.), are arboreous species of South-west Australia, all valuable for their wood.

**Cedrela Taona, Roxburgh.\***

The Singapore Cedar. A mere variety of this is the Red Cedar of East Australia (*Cedrela Australis*, Cunn.) The light beautiful wood, easily worked and susceptible of high polish, is much in request for



furniture, for the manufacture of pianofortes, for boat-building and a variety of other work. As this important tree is largely extirpated in the cedar brushes, it is highly desirable to form of it in our rich forest gullies independent plantations for future local supply. The Red Cedar is hardy at Melbourne, but in our open exposed gardens and poor soil of slow growth.

### **Celtis Australis, L.**

The Lotus tree of South Europe and North Africa. Of longevity, 50 feet high, available for avenues. Berries edible. Wood hard and dense, eligible particularly for turners and carvers' work.

### **Celtis Occidentalis, L.**

The Huckleberry Tree. A fine forest tree in Ohio, and other parts of North America. Height, 80 feet. The variety called *C. crassifolia* is the best. The sweet fruits edible. Wood elastic and fissile.

### **Ceratonia Siliqua, L.**

The Carob tree of the Mediterranean regions. It attains a height of 30 feet and resists drought well. Wood pale red. The saccharine pods, Algaroba or St. John's Bread, of value for domestic animals. The seeds germinate readily.

### **Cinnamomum Camphora, Nees.\***

The Camphor tree of China and Japan, attaining a height of about 40 feet. It endures the occasional frosts of Port Phillip, though the foliage will suffer. The wood, like all other parts of the tree, is pervaded by Camphor, hence resists the attack of insects.

### **Corylus Columna, L.**

The Constantinople Nut tree, the tallest of Hazels, attaining 60 feet in height, of rather quick growth. This, as well as the European Hazel (*Corylus Avellana*, L.) and the Japan Hazel (*C. heterophylla*, Fischer) might be grown for copses in our forest gullies.

### **Corynocarpus laevigata, Forst.**

The Karaka of New Zealand and the principal forest tree of the Chatham Islands, attaining the height of 60 feet. The wood is light, and used by the natives for canoes. The pulp of the fruit is edible. Cattle browse on the foliage. In rich humid soil the tree can be adopted for avenues.

### **Diospyros Virginiana, L.**

The N. American Ebony or Parsimon. A tree 60 feet high. Wood very hard and blackish. The sweet variety yields a good table fruit.

### **Engelhardtia spicata, Blume.**

The spurious Walnut tree of the mountains of Java and the Himalayas. It reaches a height of 200 feet.

### **Eucalyptus amygdalina, Labill.**

In our sheltered springy forest glens attaining not rarely a height of over 400 feet, there forming a smooth stem and broad leaves, producing also seedlings of a foliage different to the ordinary state of *Euc. amygdalina*, as occurs in more open country. This species or variety, which might be called *Eucalyptus regnans*, represents the loftiest tree in British territory, and ranks next to the *Sequoia Wellingtonia* in size anywhere on the globe. The wood is fissile, well adapted for shingles, rails, for housebuilding, for the keelson and planking of ships and other purposes. Labillardière's name applies ill to any of the forms of this species. Seedlings raised on rather barren ground near Melbourne have shown the same amazing rapidity of growth as those of *Euc. globulus*; yet, like those of *Euc. obliqua*, they are not so easily satisfied with any soil.

**Eucalyptus citriodora, Hooker.**

Queensland. It combines with the ordinary qualities of many *Eucalypts* the advantage of yielding from its leaves a rather large supply of volatile oil of excellent lemon-like fragrance.

**Eucalyptus diversicolor, F. v. Mueller.**

The Karri of S. W. Australia. A colossal tree, exceptionally reaching to the height of 400 feet, with a proportionate girth of the stem. The timber is excellent. Fair progress of growth is shown by the young trees, planted even in dry exposed localities in Melbourne. The shady foliage and dense growth of the tree promise to render it one of our best for avenues. In its native localities it occupies fertile, rather humid valleys.

**Eucalyptus globulus, Labill.**

Blue Gumtree of Victoria and Tasmania. This tree is of extremely rapid growth and attains a height of 400 feet, furnishing a first-class wood; shipbuilders get keels of this timber 120 feet long; besides this they use it extensively for planking and many other parts of the ship, and it is considered to be generally superior to American Rock Elm. A test of strength has been made between some Blue Gum, English Oak, and Indian Teak. The Blue Gum carried 14 lbs. weight more than the Oak and 17 lbs. 4ozs. more than Teak upon the square inch. Blue Gum wood, besides for shipbuilding, is very extensively used by carpenters for all kinds of out-door work, also for fence rails, railway sleepers—lasting about 9 years,—for shafts and spokes of drays, and a variety of other purposes.

**Eucalyptus gomphocephala, Candolle.**

The Tooart of S. W. Australia; attains a height of 50 feet. The wood is close-grained, hard and not rending. It is used for shipbuilding, wheelwright's work and other purposes of artisans.

**Eucalyptus marginata, Smith.\***

The Jarrah or Mahogany tree of S. W. Australia, famed for its indestructible wood, which is attacked neither by *Chelura* nor *Teredo* nor *Termites*, and therefore so much sought for jetties and other structures exposed to sea-water, also for any underground work, and largely exported for railway sleepers. Vessels built of this timber have been enabled to do away with all copperplating. It is very strong, of a close grain and a slightly oily and resinous nature; it works well, makes a fine finish, and is by shipbuilders here considered superior to either Oak, Teak, or indeed any other wood. The tree grows chiefly on ironstone ranges. At Melbourne it is not quick of growth, if compared to our Blue Gum (*Euc. globulus*, Lab.) or to our Stringybark (*E. obliqua*, l'Hér.), but it is likely to grow with celerity in our ranges.

**Eucalyptus rostrata, Schlechtendal.**

The Red Gum of Victoria, South Australia and many river flats in the interior of the Australian continent. Although a native tree of this colony, it has been introduced into this list on account of its wood being of extraordinary endurance underground, and for this reason so highly valued for fence-posts, piles and railway sleepers; for the latter purpose it will last at least a dozen years, and, if well selected, much longer. It is also extensively used by shipbuilders—for main stem, stern post, inner post, dead wood, floor timbers, futtocks, transomes, knight head, hawsepieces, cant, stern, quarter and fashion timber, bottom planks, breasthooks and riders, windlass, bowrails, &c. It should be steamed before it is worked for planking. Next to the Jarrah from West Australia this is the best wood for resisting the attacks of sea-worms and white ants. For other details of the uses of this and other native trees refer to the Reports of the Victorian Exhibitions of 1862 and

1867. The tree attains a height of fully 100 feet. The supply for our local wants falls already short, and cannot be obtained from Tasmania, where the tree does not naturally exist.

### **Eucalyptus Sideroxylon, Cunn.**

Iron Bark tree. It attains a height of 100 feet, and supplies a valuable timber, possessing great strength and hardness; it is much prized for its durability by carpenters, ship-builders, &c. It is largely employed by waggon-builders for wheels, poles, &c.; by ship-builders for top sides, tree nails, the rudder (stock), belaying pins and other purposes; it is also used by turners for rough work. This is considered the strongest wood in our colony. It is much recommended for railway sleepers, and extensively used in underground mining work.

### **Excæcaria sebifera, J. M. (*Stillingia sebifera*, Mich.)**

The tallow tree of China and Japan. The fatty coating of the seeds yield the vegetable tallow. The wood is so hard and dense as to be used for printing blocks; the leaves furnish a black dye. The tree endures the night frosts of our open lowlands, though its foliage suffers.

### **Fagus Cunninghami, Hooker.**

The Victorian and Tasmanian Beech. A magnificent evergreen tree, attaining colossal dimensions, and only living in cool damp rich forest valleys, not rarely 200 feet high. The wood much used by carpenters and other artisans, the myrtlewood of the trade. It requires to be ascertained by actual tests in the forests, whether the allied tall evergreen New Zealand Beeches possess any advantage over ours for forest culture, they are: *Fagus Menziesii*, Hooker, the Red Birch of the colonists; *Fagus fusca*, Hook., the Black Birch; *Fagus Solandri*, Hook. the White Birch. A magnificent beech, *Fagus Moorei*, F. von Muell. occurs in New England.

### **Fagus silvatica, L.**

The deciduous beech of Britain, of most other parts of Europe and extra tropical Asia, and as *Fagus ferruginea*, Ait. in a particular variety, extending through North America. The trunk has been measured in height 118 feet, the head 350 feet in diameter; the wood is hard, extensively used by joiners and ship-builders. An allied Beech, *Fagus Sieboldii*, Endl., occurs in Japan. All these could here be grown to advantage only in our springy mountain forests.

### **Ficus Sycamorus, L.**

The Sycamore Fig tree of the Orient, copiously planted along the road sides of Egypt. The shady crown extends to a width of 120 feet. Though introduced, we have as yet no local means of raising this tree in quantity, and must therefore rely on fresh importations of cuttings or more particularly seeds.

### **Ficus macrophylla, Desfont.**

The Moreton Bay Fig-tree, which is indigenous through a great part of East Australia. Perhaps the grandest of our avenue trees, and among the very best to be planted, although in poor dry soil its growth is slow. In our latitudes it is quite hardy in the lowland. The foliage may occasionally be injured by grasshoppers. Easily raised from seed.

### **Fraxinus Americana, L.\***

The White Ash of North America. A large tree, 80 feet high, which delights in humid forests. Timber valuable, better resisting extreme heat than the common Ash. The Red Ash (*Fraxinus pubescens*, Lam.), the Green Ash (*F. viridis*, Michx.), the Black Ash (*F. sambucifolia*, Lam.), and the Carolina Ash (*F. platycarpa*, Michx.), are of smaller size.



**Fraxinus excelsior, L.\***

The ordinary Ash of Europe and West Asia. Height 80 feet, of comparatively quick growth, known to attain an age of nearly 200 years. Rich soil on forest rivulets or riverbanks suit it best; wood remarkably tough and elastic, used for agricultural and other implements, for oars, axletrees and many other purposes. Six peculiar kinds of ash trees occur in Japan, some also in the Indian Highlands; all might be tried here.

**Fraxinus floribunda, Don.**

Nepal Ash, 40 feet high.

**Fraxinus Ornus, L.\***

The Manna Ash of the Mediterranean regions. Height about 30 feet. It yields the medicinal manna.

**Fraxinus quadrangulata, Michx.\***

The Blue Ash of North America. One of the tallest of the Ashes, 70 feet high, with an excellent timber.

**Fraxinus viridis, Mich.**

The Green Ash of North America. Height 70 feet; wood excellent.

**Gleditschia triacanthos, L.**

The deciduous Honey Locust tree of North America. Height up to 50 feet. Wood hard, coarse-grained, fissile. Sown closely, this plant forms impenetrable, thorny, not readily combustible hedges. An allied species the *G. horrida*, Willd. in East Asia. The Water Locust tree of North America (*Gleditschia monasperma*, Walt.), will grow in swamps to 80 feet.

**Grevillea robusta, Cunningh.\***

Our beautiful Lawntree, indigenous to the subtropical part of East Australia, 100 feet high, of rather rapid growth, and resisting drought in a remarkable degree: hence one of the most eligible trees for desert-culture. Our cultivated trees yield now already an ample supply of seeds. The wood is valued particularly for staves of casks.

**Guevina Avellana, Molina (*Quadrifida heterophylla*, Ka. R. & P.)**

The evergreen Hazel tree of Chili, growing as far as 30° S. It attains a height of 80 feet, and yields the Hazel nuts of S. America.

**Gymnocladus Canadensis, Lamark.**

The Chirot. A North American timber and avenue tree, attaining a height of 80 feet: allied to *Gleditschia*, but, as the name implies, thornless. The wood is strong, tough, compact, fine-grained, and assumes a rosy color.

**Juglans cinerea, L.\***

The Butternut tree of N. America. About 50 feet high; stem-diameter 4 feet. Likes rocky places in rich forests. Wood lighter than that of the Black Walnut, durable and free from attacks of insects.

**Juglans nigra, L.\***

Black Walnut tree. Attains a height of 70 feet; trunk 4 feet in diameter; found in rich forest land in N. America. Wood purplish brown, turning dark with age, strong, tough, not liable to warp or to split; not attacked by insects. Seed more oily than the European Walnut.

**Juglans regia, L.\***

The ordinary Walnut tree of Europe, but of Central Asiatic origin: it attains a height of fully 80 feet, and lives many centuries. Wood light and tough, much sought for gunstocks, furniture and other things. The shells of the nut yield black pigment. Trees of choice quality of



wood have been sold for £600, the wood being the most valuable of middle Europe. Can be grown in cold localities, as it lives at 2000 feet elevation in middle Europe. The Californian Walnut tree (*Juglans rupestris*, Engelm.) and the Chinese Walnut tree (*Juglans Mandchurica*, Maxim.) ought to be introduced here.

#### **Leucadendron argenteum, Brown.**

The Silver tree of South Africa is included on this occasion among forest trees, because it would add to the splendour of our woods, and thrive far better there than in our gardens. Moreover, with this tree many others equally glorious might be established in our mild forest glens as a source of horticultural wealth, were it only to obtain in future years a copious supply of seeds. Mention may be made of the tall Magnolia trees of N. America (*Magnolia grandiflora*, L., 100 feet high; *M. umbrellata*, Lam., 40 feet; *M. acuminata*, L., 80 feet; *M. cordata*, Michx., 50 feet; *M. Fraseri*, Walt., 40 feet; *M. macrophylla*, Michx., 40 feet), *M. Yulan*, Desf. of China, 50 feet; *Magnolia Campbelli*, Hook., of the Himalayas, 150 feet high and flowers nearly a foot across; *M. sphaerocarpa*, Roxb., also of the Indian Highlands, 40 feet; the North American Tulip tree (*Liriodendron tulipifera*, L.), 140 feet high, stem 9 feet in diameter; the Mediterranean *Styrax* tree (*Styrax officinalis*, L.); *Stenocarpus sinuosus*, Endl., of East Australia (the most brilliant of the *Proteaceæ*); the crimson and scarlet Ratias of New Zealand (*Metrosideros florida*, Sm.; *M. lucida*, Menz.; *M. robusta*, Cunn., 80 feet high; *M. tomentosa*, Cunn., 40 feet); *Fuchsia excorticata*, L., also from New Zealand, stem 2 feet in diameter; the crimson-flowered *Eucalyptus ficifolia* of West Australia; *Rhododendron Falconeri*, Hooker, from Upper India, 50 feet high, leaves 18 inches long. In the Sassafras gullies, here alluded to, also may be planted the great *Melaleuca Leucadendron*, L., the true Asiatic Cajuput tree, which grows to a height of 100 feet; even the North European Holly (*Ilex Aquifolium*), which occasionally rises to 60 feet, though both from regions so distant.

#### **Liquidambar Altingia, Blume.**

At the Red Sea and in the mountains of India and New Guinea, at 3000 feet, and probably hardy in the warmer parts of our colony. The tree attains a height of 200 feet. It yields the fragrant balsam known as liquid Storax.

#### **Liquidambar styraciflua, L.**

The Sweet-Gum tree. In morasses and on the springs of the forests of N. America, with a wide geographic range. The tree attains vast dimensions of its crown; the stem 10 feet in diameter. The terebinthine juice hardens, on exposure, to a resin of benzoin odour. Wood fine-grained.

#### **Macadamia ternifolia, F. von Muell. - (*Helicia ternifolia*, F. M.)**

The Nut tree of subtropic East Australia, attaining a height of 60 feet; hardy, as far south as Melbourne; in our forest valleys likely of fair celerity of growth. The nuts have the taste of hazels.

#### **Morus rubra, L.**

The Red Mulberry tree of North America is the largest of the genus, attaining a height of 70 feet; it produces a strong and compact timber. The White Mulberry tree (*Morus alba*, L.), with others, offering food to the silkworms, should be planted copiously everywhere for hedges or copses.

#### **Maclura aurantiaca, Nuttall.**

The Osage Orange of North America. Greatest height 60 feet; wood bright yellow, very elastic, fine-grained. For deciduous thornhedges the plant is important; its value for silkworms needs further to be tested.

**Ostrya carpinifolia**, Scopoli.

South Europe and Orient. The Hop Hornbeam. A deciduous tree, 60 feet high.

**Ostrya Virginica**, Willdenow.

Leverwood tree of North America, 40 feet high, in rich woodlands. Wood singularly hard, close-grained and heavy, in use for levers and other implements.

**Pistacia vera**, L.

Indigenous in the Orient, as far as Persia. A deciduous tree, 30 feet high, yielding the Pistacia Nuts of commerce, remarkable for their green almond-like kernels. The likewise deciduous Mediterranean *Pistacia Terebinthus*, L., yielding the Chio Turpentine, the *P. Atlantica*, Desf., and the evergreen South European *Pistacia Lentiscus*, L., furnishing the mastix, grow rarely to the size of large trees.

**Planera Japonica**, Miquel.

Considered one of the best timber trees of Japan.

**Platanus occidentalis**, L.

The true Plane tree of the East part of North America. More eligible as an avenue tree, than as a timber tree; diameter of stem at times 14 feet; wood dull red.

**Platanus orientalis**, L.

The Plane tree of South Europe and Middle Asia. One of the grandest trees for lining roads and for street planting, deciduous like the other planes, rather quick of growth, and not requiring much water; attains a height of 90 feet. The wood is well adapted for furniture and other kinds of cabinet work.

**Platanus racemosa**, Nuttall.

The Californian Plane tree. Wood harder and thus more durable than that of *P. occidentalis*, also less liable to warp.

**Populus alba**, L.

The Abele or White Poplar of Europe and Middle Asia. Height 90 feet. It proved here an excellent avenue tree, even in comparatively waterless situations, and gives by the partial whiteness of its foliage a pleasing effect in any plantation. *Populus canescens*, Sm., the grey Poplar, is either a variety of the Abele or its hybrid with the Aspen, and yields a better timber for carpenters and millwrights.

**Populus balsamifera**, L.

The Tacamahac or Balsam Poplar, of the colder, but not the coldest parts of North America, 80 feet high. Its variety is *P. candicans*, Aiton.

**Populus grandidentata**, Michaux.

North America, 60 feet high. A kind of Aspen.

**Populus heterophylla**, L.

The downy Poplar of North America. Height 60 feet.

**Populus monilifera**, Aiton. (*P. Canadensis*, Desf.)

The Cottonwood tree of North America. Height 100 feet. One of the best poplars for the production of timber.

**Populus nigra**, L.

The European Black Poplar, extending spontaneously to China. It includes *Populus dilatata*, Aiton, or as a contracted variety, *P. fasti-*

*giata*, Desf., the Lombardy Poplar. Greatest height 150 feet. Growth rapid, like that of all other poplars. Wood soft, light and of loose texture, used by joiners, coopers and turners, furnishing also superior charcoal. Bark employed in tanning. The tree requires damp soil.

**Populus tremula, L.**

The European Aspen. Height 80 feet. It extends to Japan, where also a peculiar species, *Populus Sieboldii* (Miq.) exists. The aspenwood is white and tender, and in use by coopers and joiners.

**Populus tremuloides, Michaux.**

The North American Aspen. Height 50 feet. It extends west to California, where a particular species, *Pop. trichocarpa*, Torrey, occurs. All Poplars might be planted like all Willows, in our gullies, to intercept forest-fires, also generally on river-banks.

**Quercus Ægilops, L.\***

South Europe. A tree of the size of the British Oak. The cups, known as Valonia, used for tanning and dyeing; the unripe acorns as Camata or Camatena, for the same purpose. The wood is capital for furniture.

**Quercus alba, L.\***

The White or Quebec Oak. A most valuable timber tree, 100 feet high; diameter of stem, 7 feet. Wood in use by ship-builders, wheelwrights, coopers and other artisans.

**Quercus annulata, Smith.**

A large Oak of Nepal, which provides a very good timber.

**Quercus aquatica, Walter.**

North America. Height of tree 60 feet; it furnishes a superior bark for tanning, also wood for ship-building.

**Quercus Cerris, L.**

South Europe, of the height of the English Oak, in suitable localities of quick growth. The foliage deciduous, or also evergreen. The wood available for wheelwrights, cabinetmakers, turners, coopers; also for building purposes.

**Quercus coccifera, L.**

The deciduous Kermes Oak of South Europe; so called from the red dye, furnished by the *Coccus ilicis*, from this Oak. It also supplies tanner's bark. The huge and ancient Abraham's Oak belongs to this species.

**Quercus coccinea, Wangenheim.**

The Black Oak of North America. Height 100 feet; stem-diameter, 5 feet. Foliage deciduous. The yellow dye, known as Quercitron, comes from this tree. Bark rich in tannic acid.

**Quercus cornea, Loureiro.**

China. An evergreen tree, 40 feet high. Acorns used for food.

**Quercus falcata, Michaux.**

North America. Foliage deciduous. Lives in dry sandy ground. A good-sized tree with excellent tanner's bark.

**Quercus Ilex, L.**

The Holly Oak of South Europe. Height of tree 50 feet. Wood in use for ship-building, bark for tanning. From varieties of this tree are obtained the sweet and nourishing Ballota and Chesnut acorns.

**Quercus incana, Roxb.**

A Himalayan timber tree of great dimensions, beautiful, evergreen.

**Quercus infectoria, Oliv.**

Only a small tree, with deciduous foliage. Chiefly from this tree the galls of commerce are obtained.

**Quercus lancifolia, Roxb.**

A tall timber tree of the Himalayas. Wood valued for its durability.

**Quercus macrocarpa, Michx.\***

The Bur Oak of North America. Tree 70 feet high. The timber nearly as good as that of the White Oak.

**Quercus palustris, Du Roi.**

The Marsh Oak of North America. Height 80 feet; of quick growth. The wood, though not fine-grained, is strong and tough.

**Quercus Prinus, L.**

The North American Swamp Oak. A tree, 90 feet high, available for wet localities. Foliage deciduous. Wood strong and elastic, of fine grain. A red dye is produced from the bark.

**Quercus Robur, L.\***

The British Oak, extending through a great part of Europe and Western Asia, attaining a great age and an enormous size. Extreme height 120 feet. Two varieties are distinguished: — 1. *Quercus sessiliflora*, Salisbury. The Durmast Oak, with a darker, heavier timber, more elastic, less fissile. This tree is also the quickest of the two in growth, and lives on poorer soil. Its bark is also richer in medicinal, dyeing and tanning principles. 2. *Quercus pedunculata*, Willd. This variety supplies most of the oak-timber in Britain for ship-building, and is the best for bending under steam. It is also preferred for joiner's work.

**Quercus rubra, L.**

The Red Oak of North America. Height 100 feet; diameter of stem 4 feet. The wood is not of value; but the bark is rich in tannin. Autumnal tint of foliage beautifully red.

**Quercus semecarpifolia, Smith.**

In the Himalayas. Height of tree often 100 feet; girth of stem 18 feet. It furnishes a first-class timber.

**Quercus serrata, Thunberg.**

One of the 23 known Japan Oaks. It yields the best food for the oak silkworm (*Bombyx Yamamai*.)

**Quercus Sideroxylon, Humboldt.**

Mountains of Mexico, at 8,000 feet elevation. An Oak of great size, of compact timber, almost imperishable in water. *Q. lanceolata*, *Q. chrysophylla*, *Q. reticulata*, *Q. laurina*, *Q. obtusata*, *Q. glaucescens*, *Q. Xalapensis* (Humb.) and *Q. acutifolia* (Nee), are among the many other highly important timber Oaks of the cooler regions of Mexico.

**Quercus squamata, Roxburgh.**

One of the tallest of the Himalayan Oaks. Wood lasting.

**Quercus Suber, L.\***

The Cork Oak of South Europe and North Africa; evergreen. It attains an age of fully 200 years. After about 20 years it can be stripped of its bark every 6 or 7 years; but the best cork is obtained from trees over 40 years old. Height of tree about 40 feet. Acorns of a sweetish taste,



**Quercus Sundaica, Blume.**

One of the oaks from the mountains of Java, where several other valuable timber oaks exist.

**Quercus Toza, Bosc.**

South Europe. One of the handsomest oaks, and one of the quickest of growth. Foliage evergreen.

**Quercus virens, L.\***

The Live Oak of North America, evergreen, 50 feet high. Supplies a most valuable timber for shipbuilding; it is heavy, compact, fine-grained; it is moreover the strongest and most durable of all American Oaks. Like *Q. obtusiloba*, Michaux., it lives also on seashores, helping to bind the sand, but it is then not of tall stature. Of many of the 300 Oaks of both the Western and Eastern portion of the Northern hemisphere, the properties remained unrecorded and perhaps unexamined; but it would be important to introduce as many kinds as possible for local test-growth. The acorns, when packed in dry moss, retain their vitality for some months. The species with deciduous foliage are not desirable for massive ornamental planting, because in this clime they shed their dead leaves tardily during the very time of our greatest verdure.

**Rhus vernicifera, Cand.**

Extends from Nepal to Japan. It forms a tree of fair size, and yields the Japan varnish.

**Rhus succedanea, L.**

The Japan Wax tree, the produce of which has found its way into the English market. The Sumach (*Rhus coriaria*, L.), and the Scotino (*Rhus Cotinus*, L.), both important for superior tanning and for dyeing, thrive here quite as well as in South Europe. They are more of shrubby growth.

**Robinia Pseudacacia, L.**

The North American Locust Acacia. Height to 90 feet. The strong hard and durable wood is for a variety of purposes in use, and particularly eligible for tree nails. The roots are poisonous. The allied *Robinia viscosa* attains a height of 40 feet.

**Sassafras officinale, Hayne.**

The deciduous Sassafras tree, indigenous from Canada to Florida, in dry open woods. Height 50 feet; leaves lobed; wood and bark medicinal, and used for the distillation of Sassafras oil.

**Sophora Japonica, L.**

A tree of China and Japan, resembling the Laburnum, up to 60 feet high; wood hard and compact, valued for turner's work. All parts of the plant purgative; the flowers rich in a yellow dye.

**Salix alba, L.\***

The Huntingdon or Silky Willow of Europe and Middle Asia. Height 80 feet, circumference of stem 20 feet; wood light and elastic, available for carpenter's work and implements, bark for tanning. The golden Osier (*Salix vitellina*; L.), is a variety. The shoots are used for hoops and wickerwork.

**Salix Babylonica, Tournefort.**

The Weeping Willow, indigenous from West Asia as far as Japan. Important for consolidating river banks.

**Salix caprea, L.**

The British Sallow or Hedge Willow; grows also to a tree; wood useful for handles and other implements, bark for tanning. It is the earliest flowering willow.

**Salix cordata, Muehlenb.**

One of the Osiers of North America.

**Salix daphnoides, Villars.**

Middle Europe and Northern Asia, as far as the Amoor. A tree of remarkable rapidity of growth, 12 feet in four years.

**Salix fragilis, L.**

The Crack Willow. Height 90 feet, stem to 20 feet in girth. A variety of this species is the Bedford Willow, *Salix Russelliana*, Smith, which yields a light elastic tough timber, more tannin in its bark than oak, and more salicine (a substitute for quinine) than most congeners.

**Salix lanceolata, Smith.**

One of the Basket Willows, cultivated in Britain.

**Salix lucida, Muehlenb.**

One of the Osiers of North America.

**Salix purpurea, L.**

Of wide range in Europe and West Asia. One of the Osiers.

**Salix rubra, Hudson.**

Throughout Europe, also in West Asia and North Africa; is much chosen for Osier beds. When cut down, it will make shoots 8 feet long in a season.

**Salix triandra, L.\* (*S. amygdalina*, L.)**

The Almond Willow, through nearly all Europe and extratropical Asia. Height of tree 30 feet. Shoots 9 feet long, for hoops and white basket work, being pliant and durable.

**Salix viminalis, L.\***

The common Osier of Europe and North Asia, attains the height of 30 feet. One of the best for wicker-work and hoops; when cut it shoots up to a length of 12 feet. It would lead too far to enumerate even the more important willows all on this occasion. Professor Andersson, of Stockholm, admits 158 species. Besides these, numerous hybrids exist. Many of the taller of these willows could here be grown to advantage.

**Tilia Americana, L.**

The Basswood tree or North American Linden tree, growing to 52° North Latitude. Height of tree 80 feet, diameter of stem 4 feet; wood pale and soft. *Tilia heterophylla*, Vent., the Silver Lime of North America, and *Tilia Manchurica*, Rupr., of South Siberia might be tested.

**Tilia Europæa, L.**

The common Lime of Europe, extending naturally to Japan, the large leaved variety of South European origin. Height up to 120 feet, exceptionally 50 feet in girth. The wood pale, soft and close-grained, sought for turnery and carving; the bast excellent for mats.

**Ulmus alata, Michx.**

The Whahoo Elm of North America. Height of tree 30 feet; wood fine-grained,

**Ulmus Americana, L.**

The White Elm of North America, a tree fond of moist river banks, 100 feet high; trunk 60 feet, 5 feet in diameter.

**Ulmus campestris, L.\***

The ordinary Elm, indigenous to South Europe and temperate Asia, as far East as Japan. Several marked varieties, such as the Cork Elm and Wych Elm, exist. The Elm in attaining an age of several centuries becomes finally of enormous size. The wood is tough, hard, fine-grained and remarkably durable, if constantly under water; next to the Yew, it is the best of European woods, where great elasticity is required, as for archery bows. It is also used for keels, blocks and wheels. Bast tough.

**Ulmus Floridana, Chapman.**

The West Florida Elm, 40 feet high.

**Ulmus fulva, Michx.**

The Slippery or Red Elm of North America, 60 feet high; wood red, tenacious.

**Ulmus racemosa, Thomas.**

The Cork Elm of North America.

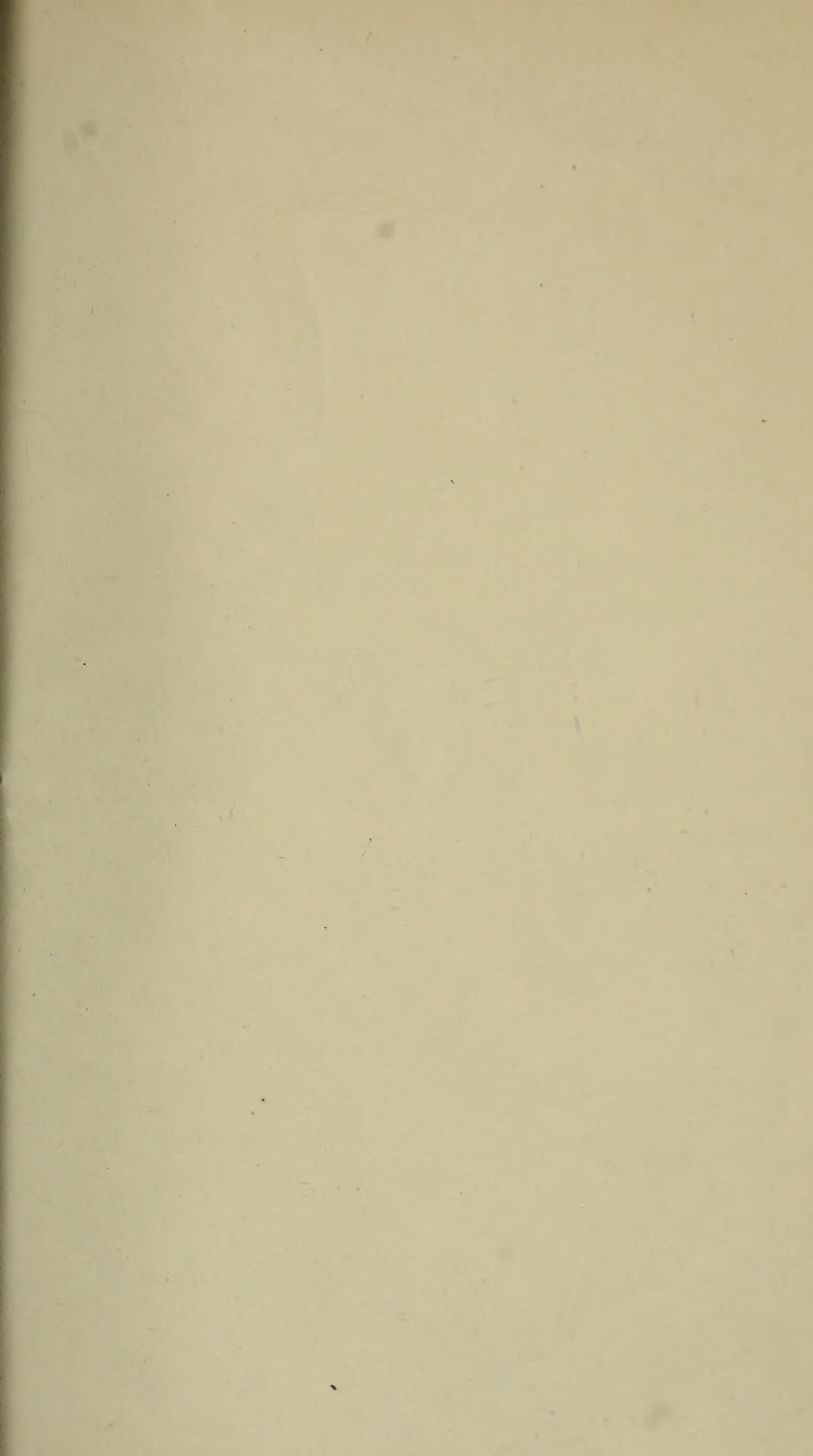
For fuller information on trees, long known, refer to Loudon's Classic "Arboretum;" also for many further details to Lindley's Treasury of Botany, to Asa Gray's Manual, to Nuttall's North American Sylva, to Lawson's Pinetum and many local works; also to the volumes of the Exhibitions of 1862 and 1867.

The trees marked with an asterisk \* should receive prominent attention in Victorian woodculture. The dimensions given are the greatest, of which the writer could trace reliable records.

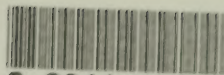












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